DOMESTIC ENGINEERING

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Domestic Engineering says: It is just as easy to cultivate the acquaintance of the banker as it is the poolroom loafer—and is a hundred times more profitable.

WHEN HE ANSWERS "BUSINESS IS POOR."

"HOW'S Business?" This cheery greeting from the salesman as he enters your store—from the cashier as you step into the bank—from the friends you meet as you wend your way homeward after the day's tribulations—what does it signify?

How do you answer it? "Nothing doing," business is rotten," "the bottom's fallen out of everything"—are these the answers you give?

There's a certain strain in human nature that requires sympathy—that craves the interest of others. Then there's that habit, so easy to get into, so hard to shake off, of unloading one's troubles into the ears of more or less attentive friends.

This same habit is not a new one—we all know individuals of the feminine gender who are constantly ailing—their aches and pains comprise their main source of gossip—their minds seem to run to troubles.

Perhaps we can excuse them many times—but is there any excuse for the business man who makes his troubles, real or imaginary, the source of his conversation?

Does it help to inspire confidence with the supply house, the banker, the customer?

Yes, we all have our troubles. Many of them are real ones, too. But the other fellow has enough of his own—he doesn't want to shoulder ours, too.

You can help to lighten *his* worries by lightly considering your own, by optimistic conversation—by a cheery greeting and a hearty hand clasp.

The plumber and fitter who puts into his business this same spirit, and whose cheerful personality pervades the whole shop, will find that the effort will pay actual dividends in the course of his business.

That optimism—that whole-heartedness—that you will find in some organizations and not in others—can be traced right back to the "old man." It is his duty, above all other things, to inspire the confidence of his working force—his men can radiate this spirit among the customers, and his own personality will be multiplied a hundred fold.

Whenever you have your employees boosting for you, you'll find the results in the better bank balance. You can't stop, though, and lie back on the oars. Business must not be allowed to stand still, or it will go back. Twentieth Century methods must be utilized—we're living in a time of action.

Call it personal magnetism if you will, or anything else, for that matter. Suffice it to say—it gets results—and business.

Look prosperous—act prosperous—you'll find yourself prosperous, in spite of yourself.

THAT CONVENTION PAPER.

THE Convention season will soon be with us. Several of the state conventions are scheduled for January and February—others will follow later.

The opportunity is offered to meet with the progressive men of the trade—to get the viewpoint of the other fellow—to receive inspiration—this is the purpose of the convention. That politics has many times entered, to the detriment of the members, is not a fault of the convention idea.

Those who are to prepare papers should be actively at work on them—getting the ideas of those most interested—the result to be made of greatest benefit to the craft.

The trade is making great strides—do your little mite to boost it along—attend your state convention when it meets.

Heating New England House With Hot Water

The Heating of an Old House is Not Always a Simple Matter. Particular Care was Taken in This Case with Excellent Results.

By EDWARD R. PIERCE

WE all learn much from observation and experience but the reasons that actuate the use of certain sized pipe, or of a certain sized radiator upon a given heating plant, are not always clear to observation, nor does our personal experience, perhaps, give any clue as to the reason. The fact that there are so many different plans possible of successful use in the heating of any ordinary dwelling house with hot water, rather demands that the most explicit information be given as to the "why and wherefore," when any one of the several possible, are to be presented to the trade.

It is not to the old, experienced and educated fitter that this simple heating plant is presented, but to the beginner in the craft. And for his benefit much detail of the reason why of each of the steps taken, in installing this plant, will be gone into.

The house itself was built of brick about seventy years ago. The original windows have been changed to the more modern type and a bay-window has been put on to the south front rooms. The house faces nearly east. The front of the main house is forty feet with a depth of thirty feet. There is the usual ell, found on most of

This Old Home was Recently Piped for Hot Water.

the New England houses, the ell being twenty-eight feet deep and seventeen feet wide. Under the whole is a cement cellar as shown on Plan A-6¾ feet in the clear.

The owner desired to have as little of the cellar taken up with piping as possible and especially required that the center of the cellar be kept free from a multitude of pipes. This was the determining reason for selecting a single pipe circuit system as shown on the plan.

The house contains twelve rooms and two halls that are to be heated. Some of the rooms are to be estimated at 65 degrees, some at 70 degrees, and some at 75 degrees Fahrenheit temperature.

Plan B, shows the location of the rooms on the first floor that are to be heated. The rooms have the following measurements:

Room No. 1, front room on the Southeast front, height 10 feet, width 16 feet, length 16 feet, plus the bay window for about one-half of the width. The measuring of the bay window will be separately explained. The floor of bay window is exposed to outside air, one window 3½ x 6½ feet, four windows 2x6½ feet. The entire front and south side of the room is exposed to the outer air. In the room is a very large fireplace with a damper which can be closed. The area of this damper, when open, is 100 square inches. The chimney is 30 feet high above the throat of the fire-place and is straight and clear after the fireplace opening to the chimney which is 8x24 inches. The damper, of iron, is tightly cemented to this opening.

Room No. 2, on northeasterly front, height 10 feet, length 16 feet, width 16 feet. There are two windows each 3½ x 6½ feet, one facing east the other north. The exposed wall, including windows, is 32 x 10 feet. The northerly wall is very slightly sheltered from the prevailing winds by trees and a building some distance away.

Room No. 3, southwest room, has no outside door and opens into two warm rooms with the change of air not more than for an upstairs room. Height 10 feet, length 12 feet, width 12 feet. One window 3½ x 6½ feet is in this room. The total wall exposed to outside air, including the window, is 24 feet by 10 feet.

Room No. 4. This room has a fireplace with a throat opening of 100 square inches. It has no damper but can be closed up tightly for the winter. There is to be no provision for the fireplace, but room is to be figured on basis that it is to be closed. Height 10 feet, length 12 feet, width 12 feet. One window 3½ x 6½ feet. The exposed wall, including window, is 24 x 10 feet. Has about the same slight windbreak as Room No. 2.

Room No. 5. On the plan this downstairs hall is termed Room No. 5, but it is intended that it shall be finally heated with the upstairs hall, or Room No. 7 on the plan, with a radiator to be placed in this lower hall. The measurements of this lower hall are: Length 20 feet, width 8 feet, height 10 feet.

There is no direct exposure to the outside air from this room, the entire east front of it being covered with the vestibule, while the length and westerly end have warm rooms in contact. For this reason the ordinary leakage from this lower hall can not be considered as more than that from an upstairs room. The exposure in width is 8 feet, height 10 feet, including doors with total of 5x7 feet, glass in doors 12 sq. feet, hardwood doors 2½ in.

Room No. 6. Temperature 75. This, the dining room, has a length of 16 feet, width 16 feet, height 10 feet. This room has not much protection from the winter wind, and as about one-half of the north wall is exposed an allowance of at least 15 per cent can be safely added to the radiation for this exposure.

Room No. 7. This upstairs hall is to be figured and used in connection with the lower hall, the radiator to be placed in the lower hall under the stairs. The room is in the form of a T, and is measured in two sections. Length of section one 25 feet, width 8 feet, height 9 feet. The cross section of the lower end of the long hall is 16 feet long, 4 feet wide, and 9 feet high. The ceiling of both sections is exposed to a colder room above and an allowance for the loss of heat from this source must be made. The ceiling surface is 25 x 8 + 16 x 4. The upper hall has four windows each 2½ x 5½ feet. The total area exposed to outside air, 16x9, including windows.

Room No. 8. Temperature 65. Southeast chamber,

length 16 feet, with bay window 8 feet one way; width 16 feet with bay window 4¼ feet one way; height 9 feet. Exposed wall 24 + 16 x 9. Exposed windows 1 = 3½ x 6:4 = 2 x 6 feet each. Exposed ceiling 16 x 16 + bay 8 x 4¼ ft.

Room No. 9. Temperature 65. Southwest chamber, length 12 feet, width 12 feet, height 9 feet. Exposed ceiling to a colder room 12 x 12 feet. Exposed walls 24 x 9 feet. One window 3½ x 6 feet.

Room No. 10. Temperature 70. North chamber. Length 16 feet, width 16 feet, height 9 feet. Exposed wall including window 32 x 9 feet. Exposed ceiling 16 x 16 feet, to a colder room above. Windows two each, 3½x6 feet.

Room No. 11. Temperature 70. Northwest chamber, length 12 feet, width 12 feet, height 9 feet. Exposed wall 24 x 9 feet, including window 3½ x 6 feet. Exposed ceiling 12 x 12 feet, to a colder room above.

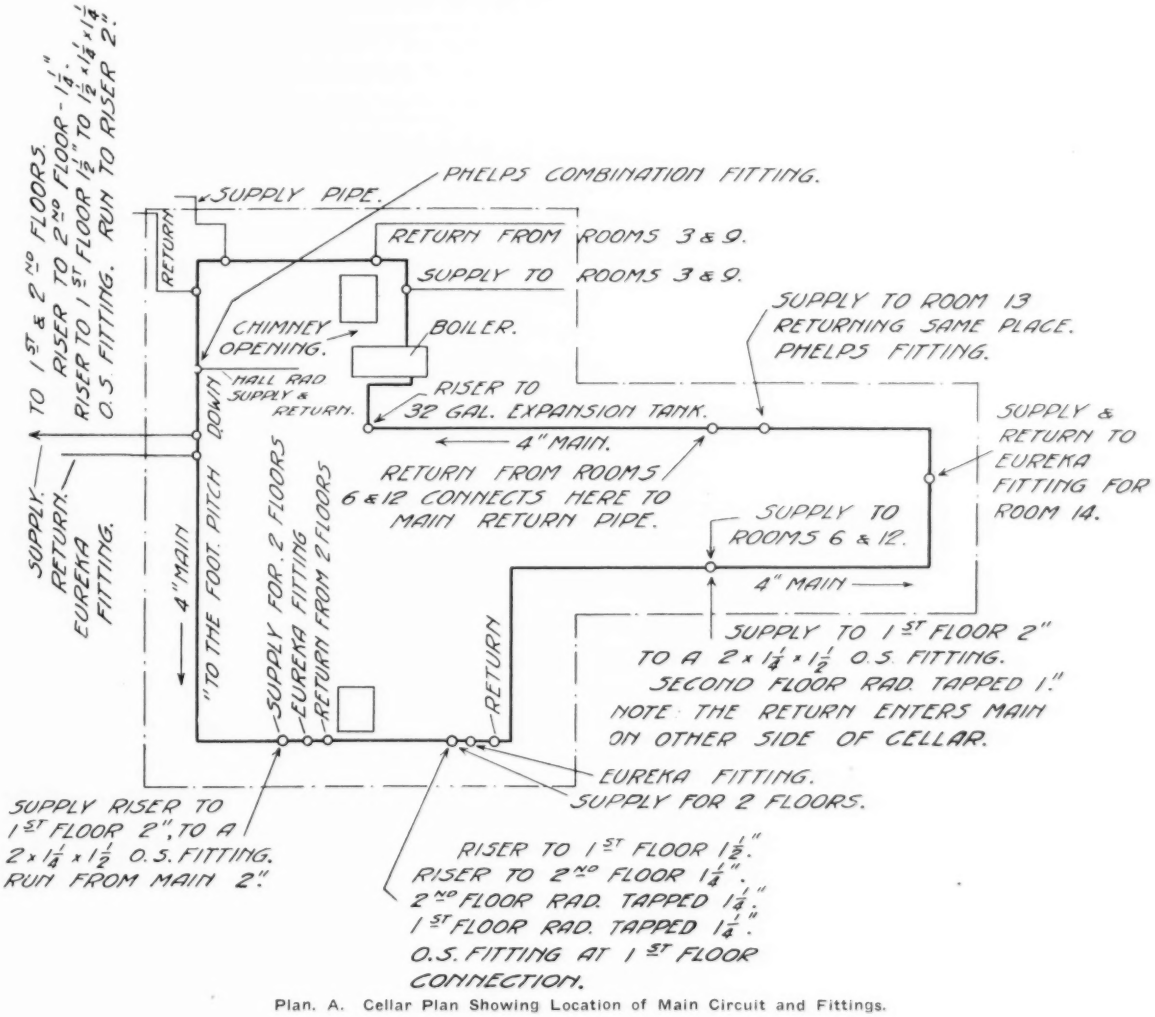
Room No. 12. Temperature 75. Bath-room, length 13 feet, width 12 feet, height 8 feet. Exposed wall 11 x 8 feet, including window 3 x 5 feet. Exposed wall 13 x 8 feet to a cold hall on north side of room. Exposed ceiling 13 x 11 feet. The kitchen chimney passes through the open space above the bath and keeps this space at about 42 degrees F.

Room No. 13. Temperature 65. Sleeping room in ell, length 13 feet, width 12 feet, height 8 feet, window 3 x 3 feet. Exposed wall including window 13 x 8 feet. Exposed ceiling to room at 42 degrees F. 13 x 12 feet. Exposed wall to cold hall on north side 13 x 8 feet.

Room No. 14. Temperature 65. Sleeping room, length 10 feet, width 9 feet, height 8 feet. One window 3 x 5 feet. One window 3 x 3 feet. Exposed wall including windows, 19 x 8 feet. Exposed wall to cold hall on north side 9 x 8 feet. Exposed ceiling to room 42 degs. F., 9 x 10 feet.

With the exception of the measurement of the bay window we are now ready to "figure up" the amount of radiation that will be required to heat the various rooms.

I have found, however, that many of our fitters do not fully understand how to get at the cubic contents of a slightly irregular place like this window. Therefore, it perhaps will be well to explain this one at this point. When this space is examined it will be seen that it is composed of two parallelograms and two acute angles which when put together produce the third parallelogram. If, then, the space marked E—F be increased by the distance between H-D, the distance will be the same as the base line H-C, and will contain the same area as would be obtained by measuring each of the acute angles and


TO 1ST & 2ND FLOORS.
RISER TO 2ND FLOOR - 1".
RISER TO 1ST FLOOR 1½" TO 1½ x 1¼ x 1¼
O.S. FITTING. RUN TO RISER 2".
SUPPLY PIPE.
PHELPS COMBINATION FITTING.
RETURN.
RETURN FROM ROOMS 3 & 9.
SUPPLY TO ROOMS 3 & 9.
SUPPLY TO ROOM 13 RETURNING SAME PLACE. PHELPS FITTING.
CHIMNEY OPENING.
BOILER.
HALL RAD SUPPLY & RETURN.
RISER TO 32 GAL. EXPANSION TANK.
SUPPLY & RETURN TO EUREKA FITTING FOR ROOM 14.
4" MAIN.
RETURN FROM ROOMS 6 & 12 CONNECTS HERE TO MAIN RETURN PIPE.
SUPPLY TO ROOMS 6 & 12.
SUPPLY. RETURN. EUREKA FITTING.
4" MAIN
"TO THE FOOT. PITCH DOWN
SUPPLY FOR 2 FLOORS
EUREKA FITTING
RETURN FROM 2 FLOORS
4" MAIN
SUPPLY TO 1ST FLOOR 2" TO A 2 x 1¼ x 1½ O.S. FITTING. SECOND FLOOR RAD. TAPPED 1." NOTE: THE RETURN ENTERS MAIN ON OTHER SIDE OF CELLAR.
RETURN
EUREKA FITTING.
SUPPLY FOR 2 FLOORS.
SUPPLY RISER TO 1ST FLOOR 2", TO A 2 x 1¼ x 1½ O.S. FITTING. RUN FROM MAIN 2".
RISER TO 1ST FLOOR 1½".
RISER TO 2ND FLOOR 1¼".
2ND FLOOR RAD. TAPPED 1¼".
1ST FLOOR RAD. TAPPED 1¼".
O.S. FITTING AT 1ST FLOOR CONNECTION.

Plan. A. Cellar Plan Showing Location of Main Circuit and Fittings.

adding their surfaces. The lines E-G-C-H contain the area of the parallelogram No. 2 and also that of both the angles. (See Fig. 1).

The measurer's notes, which we have taken, now become the object of all our attention for awhile in order that we may find out what amount of heat will be lost from these rooms.

Commencing with the room No. 1 we find the following: Cubic contents 16 x 16 x 10 plus bay window 2 x 8 x 10 plus 6½ x 2¾ x 10 equal total of 2,900 cubic feet. But as this is a downstairs room and subject to the opening of doors to the outside air more frequently than are upstairs rooms, the loss of heat is considered, from much experimenting, to be equal to twice the contents. Therefore, the total volume of air to be heated is 2,900 x 2 = 5,800 cubic feet. The exposed wall is next figured. This is given as 40x10=400 square feet, but this contains the window surface, which must be considered as a separate factor. The window surface equals 74¾ sq. ft. Therefore the REAL exposed wall is 400—74.75=325.25 square feet. The measurer says the floor of the bay window is exposed to the outer air; it must be taken into account for 34 square feet.

There is a big fireplace in this room with an opening into the chimney of 100 square inches in area. This chimney is 30 feet high above the throat of the fireplace. If

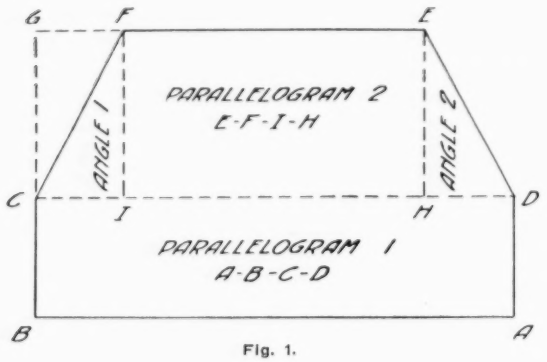


Fig. 1.

this fireplace is to remain open during the winter it will carry a large per cent of heated air from the room. Under average conditions the amount of heat loss to be charged to this fireplace would be about 160 cubic feet of air per minute, or sixty times that amount per hour, or 9,600 cubic feet, which we shall find will require at least fifty-eight square feet of 2 column radiation to take care of.

It would be a waste of time to go over every item of the measurer's notes for the purposes of this article. It is assumed that from the directions already given and to follow for this one room that any one not already conversant with the "figuring up" for heating will have no difficulty in checking the totals for each room from the measurer's notes previously given.

Having found the cubic contents of each room, the exposed real wall surface, after the window surface has been deducted, also the square feet of window surface and of the surface of any door that opens to the outside air, the square feet of wall surface that may have a colder room adjoining it, and last, but by no means the least source of loss, the square feet of ceiling surface that is exposed to colder air in a room above it, the whole matter is summed up in a tabular form, and each item of loss extended into Heat Units.

It will be understood that all these various things are being explained for the aid of the men who do not know WHY they do certain things, or use certain rules, except that some one else has told them that that was the way to do and they have found that in most cases it "worked out all right."

As the members of the trade come to fully understand that each and every rule now in use, has as its foundation the heating of a certain quantity of air, by the heat that is required to raise one pound of water one degree, and that, under the same conditions, this amount of heat required to raise one pound of water one degree is always the same, they will cease guessing, and instead, measure the quantity of heat required for the conditions that confront them on each individual installation of a heating plant. The use of the Heat Unit is, in itself, as simple as the use of the Unit of the Foot rule.

For most purposes it is measuring closely enough to say that the amount of heat that will raise one pound of water one degree in temperature by the Fahrenheit scale, will raise one and one-half cubic feet of air one degree Fahrenheit.

It would be rather a poor steamfitter who could not use his foot rule with sufficient skill to enable him to find the length, width and height of a room, and whose mathematical skill would not permit him to multiply the three items to find the cubic feet contained.

If at this point he was asked how many tons of coal could be put in that room if each ton occupied thirty-five cubic feet of space, you would hardly expect to find him guessing at the answer.

So it is, in these days, that we hardly expect to find men who claim to be steamfitters, trying to use anything but the logical rules that are developed from the basic fact of the amount of heat that will raise one pound of water one degree. This is the first unit of their measure and the fact that this unit will raise one and one-half cubic feet of air one degree, is naturally the second item.

As in nearly every step of putting in their pipe work they have to use their foot rule unit in getting correct lengths, so in measuring for radiation, at nearly every step they must use their Heat Unit rule if they expect to have correct work. It required some study and some practice, before they could accurately use their foot rule unit. It will require the same to use the Heat Unit accurately. But any man who can use his foot rule for measuring correctly, has but little to learn when he begins to use the Heat Unit rule in measuring heat losses. Just how simple the whole thing really is, the figures for this old house will disclose.

And as some reader may wish to investigate the matter enough to enable him to apply the method to any job that may come before him, reference to pages and titles of reliable books more fully explaining each of the more important things will be given. This will be found of great value to those who wish to really know how to select the proper sizes of radiators and main pipes for any sort of a hot water job.

The first thing, therefore, after getting the detail of the measurements of the rooms, is to find out how much heat will be lost from the various rooms. Each factor which goes to make up the room, has its own particular contribution towards the total loss, and should be carefully provided for in the total loss.

A short time since, I was asked what I meant by heat loss from a room. Possibly the same thing may be bothering someone else.

In figuring the heat loss from a room the supposition is that the loss will be based upon, and figured from,

that degree of temperature that it is intended that the room shall attain.

In this house there are rooms that are desired to be maintained at 65 degrees, and at 70 degrees, and at 75 degrees.

In figuring the loss of heat from the various factors, the tables given in Pierce's "Practical Manual of Steam and Hot-Water Heating" are used. It is published by the Domestic Engineering Company, as are also other books to which reference will be made, like Frof. Allen's "Notes On Heating and Ventilation" and others.

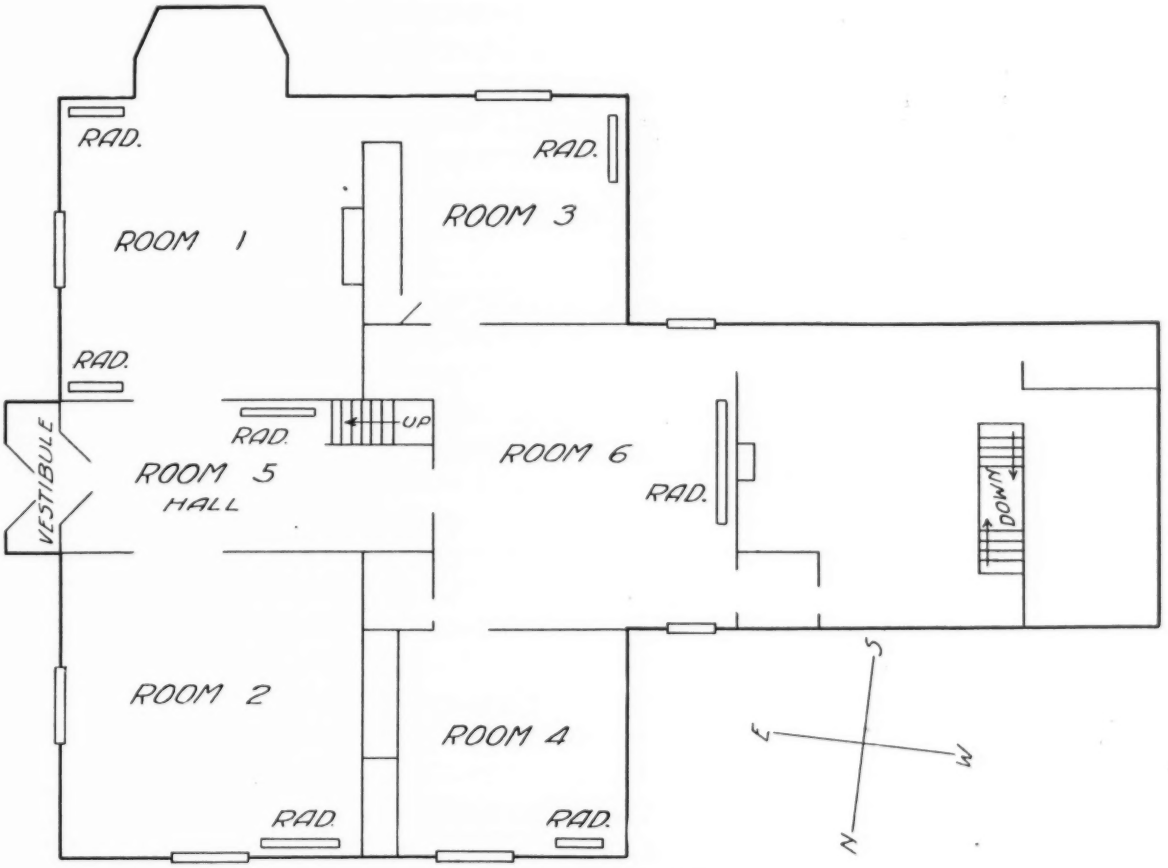
For convenience, I will state here the factors used for ascertaining the various losses expected to occur from the rooms.

Loss of Heat from windows, 76.3.....(Note 4)
Loss of Heat from outside doors.....(Note 5)
Loss of Heat from ceilings, 9 to 23 B. t. u. per sq. ft.....(Note 6)
Loss of Heat from cold floor, 17.5 per sq. ft....(Note 7)
Loss from wall to cold hall, 12 B. t. u. per sq. ft. (Note 8)
Loss from fireplace opening.....(Note 10)
Heat emitted from sq. ft. 2 col. radiator 165 B. t. u. .....(Note 9)

The use of these factors of loss will be easily understood from the following figures:

Room No. 1.

Cubic contents, 16x16x10 plus 8x4¼=2,900x2 (Note 1).....=5,800 cu. ft.



Plan B. Ground Floor Rooms.

Cubic contents multiplied from 1½ times to 2 times, for leakage.....(Note 1)
British Thermal Unit.....(Note 2)
Loss of Heat from walls 19 to 20 B. t. u. per sq. ft .....(Note 3)

1. See pages 25 and 97 Pierce's Manual of Steam and Hot Water Heating; page 24 Allen's Notes on Heating and Ventilation 3d edition; Sect. 118 page 232 Carpenter's Heating & Ventilating Buildings, 5th edition.
2. See pages 35-36-37 Pierce's Manual; page 22 Allen's Notes.
3. See pages 14 and 44 to 51 inclusive, also pages 59 and 74, Pierce's Manual.
4. See pages 52 to 62 inclusive, Pierce's Manual.
5. See page 63, Pierce's Manual.
6. See page 74, Pierce's Manual.
7. See pages 72-73, Pierce's Manual.
8. See page 51, Pierce's Manual.
9. See page 42, Allen's Notes; pages 86, Carpenter's Heating and Ventilating; pages 39 to 42 inclusive, Pierce's Manual.
10. See page 65, Pierce's Practical Manual of Steam and Hot Water Heating.

Cubic contents 5,800x1.5 (Note 2)..... 8,700 B. t. u.
Exposed walls sq. ft. 16+24×10=400—74.¾ sq. ft. window 400—74.75=325¼ sq. ft. x 19 equal (Note 3) ..... 6,179 B. t. u.
Windows 3½ x 6 plus 2x6x4 = 74.75 x 76.3 (Note 4) ..... 5,703 B. t. u.
Bay window floor, exposed to air, 34 sq. ft. x 17.5 (Note 7)..... 595 B. t. u.
Loss through fireplace, if left open (Note 10)
Total loss of heat in B. t. u.....21,177 B. t. u.

Total loss ÷ by heat emitted from sq. ft. radiator surface will show square feet radiation needed: 21,177 ÷ 165 equal ..... 128 sq. ft.
If fireplace is left open, add..... 58 sq. ft.
The fireplace opening is 100 square inches, or 100/144

of a square foot. The fireplace flue is at the side of the boiler flue and will be kept at an average temperature of probably 15 degrees difference with the outside air. The loss per square foot per minute through a 30 foot chimney is given as 230 cubic feet per minute. At this difference 100/144 of 230 = 160 cubic feet per minute. 60 minutes to the hour 160 x 60 = 9,600 cubic feet, this, divided by 165 = 58 square feet. It does not seem necessary to extend here the entire figures and explanation regarding each room as it would only be repeating over and over with slightly differing figures ,the same problems.

In those rooms where there is all, or a portion, of the ceiling exposed to rooms cooler at all times than the room in which a radiator is to be put, the proper allowance for this loss is figured in the same manner as other losses, using the data given in Pierce's Practical Manual of Steam and Hot-Water Heating, page 74, Table R, as the guide for the correct figure for the multiplier. For instance; if the warm room averaged 72 degrees temperature and the cold room above averaged 42 degrees, the difference would be 30 degrees. This difference, multiplied by the factor for loss per square foot of surface per degree of difference would be 30 x 0.60 = 18. If the difference was only 20 degrees the loss per square foot to the colder room would be 12 B. t. u. per square ft. per hour.

The complete figures for the rooms will be found to be as in the following list:

Room Number	Room Temperature Required Degs. F.	Total Heat Loss in B. T. U. per Hr.	B. T. U. Emitted Sq. Ft. per Hr.	Total Radiator Surface Needed
1	70	21,177	165	128 sq. ft.
2	70	16,642	165	112*
3	70	9,103†	165	52
4	70	10,405‡	165	72*
5 and 7	70	19.889	165	120
6	75	12,665	157	92*
8	65	17,319	173	100
9	65	8,547	173	52
10	70	14,653	165	100*
11	70	9,174	165	64*
12	75	8,221	157	52
13	65	8,635	173	48
14	65	7,287	173	40
Total number of square feet of radiation required				1,032

Having found how many feet of radiation will be required, the next step will be to determine the size of Main pipe line. From the notes of the measurer, it is evident that a single pipe circuit will take up less room in the cellar than any other plan, so we will figure for that.

At this point, probably more fitters in this country are hopelessly at sea for a reason WHY they use any certain sized pipe, rather than some other size, than they are at any other place in the whole heating problem. As I write this, I have before me the pipe size recommended by several different fitters of high standing for this job, and they vary from a 2½ inch to a 6 inch pipe.

It is evident then, that if the student of the science of steam and hot water heating desires to know WHY either one of these, or of any particular size pipe, shall be used, he must have something given him in explanation that will enable him to know the different requirements that enables one fitter to choose a 2½ inch pipe for this job, another a 3 inch, another 4 inch and so on through the list.

It is all plain enough when understood, but rather a mystery to the man who does not KNOW the manner in which a proper sized pipe for a certain predetermined condition should be ascertained.

In the first place, then, the size of pipe to be used will depend upon several conditions and considerations.

The first thing to decide is the number of degrees in temperature that we propose to have the water lose in its circuit.

There is a great difference in judgment, or experience, among engineers on this point. Some have found that they did best when they figured for a loss of only 5 degrees, some figure 8 degrees, quite a large number figure 10 degrees loss, which is the base of Prof. Carpenter's table. Others figure 15 degrees loss, and still others figure 20 degrees loss. This latter is the base of one of Prof. Allen's tables in "Notes on Heating and Ventilation."

It is evident that it will make some difference how fast the water travels through the piping to produce these results.

Remember, that in each case, one pound of water must be cooled one degree for each degree of loss in the circuit, and that all cooling is based upon one square foot of radiating surface. Suppose there are 100 square feet of surface in a room. To heat the room to say 70 degrees, each pound of water supplied to that radiator will have to stay in the radiator a longer period to lose 20 degrees in temperature in passing through it than would be necessary if the loss was only 5 degrees. The water must travel faster in one case than in the other. This shows that velocity is one of the things that we must consider. Another thing to be considered is the quantity of water that must be moved each hour to supply the radiator with the necessary number of pounds of water so that the cooling at the proposed rate shall be provided for. This means that a certain number of cubic feet of water must pass through the pipe provided, and it is clear that to provide for this, a certain well defined area, or size of pipe, must be provided, which, when proper allowance for friction is made, will certainly deliver the required amount.

It is clear enough, then, that the rate of cooling will determine the cubic feet of water to be moved and that the velocity at which the water is to move divided by the cubic feet to be moved will determine the area of pipe required without any provision for friction.

Now let us decide upon the loss in temperature which we wish to occur in the circuit. In the piping sizes most used the loss, or drop, is figured all the way along from 8 degrees to 10, 12, 15 and 20 degrees. Suppose we decide upon an average of them all, or 13 degrees.

Then we must find the average length of the return pipes from the radiators to the point of entrance to the boiler. In most house jobs it will be about what it is in this one, namely, 10 feet.

The type of radiator must be considered also, because there is considerable difference in the B. t. u. emitted per degree of difference in temperature.

The two column can be expected to emit 1.65 B. t. u. to three column 1.6; single column 1.8, while the four column should not be figured better than 1.35 B. t. u. (See Pierce's "Manual," pages 82 and 334 to 337; Allen's "Notes on

† (1½ times per hour).
‡ (2 times per hour).
* The radiator surface in north and northwest rooms increased from 10 to 15 per cent.

Heating and Ventilation," page 42; Carpenter's "Heating and Ventilating Buildings," page 80.)

We now have decided that we must supply 1,032 square feet of radiating surface; that the loss in temperature during each circuit shall be 13 degrees; that the average length of the return pipe from radiator is to be 10 feet; and that we will use two column radiation, to yield 1.65 B. t. u. per square foot per degree of difference between its surface and the temperature of the room at 70 degrees.

We will now try to find out what size of pipe to use to cover these conditions.

We will begin by finding out how many cubic feet of water we shall need to move. One cubic foot of water at 180 degrees weighs 60.55 lbs.*

Each square foot or two column radiator is to yield 1.65 B. t. u. per degree of difference between radiator and room at 70 degrees. Then 1.65 multplied by 110 (180—70—110) equals 181.5. As each B. t. u. cooled means the cooling of one pound of water one degree, it follows that 181.5 divided by the total loss of 13 degrees, which we propose to provide for the circuit, will show what number of pounds of water will be required by each square foot: $181.5 \div 13 = 14$ pounds per square foot per hour.

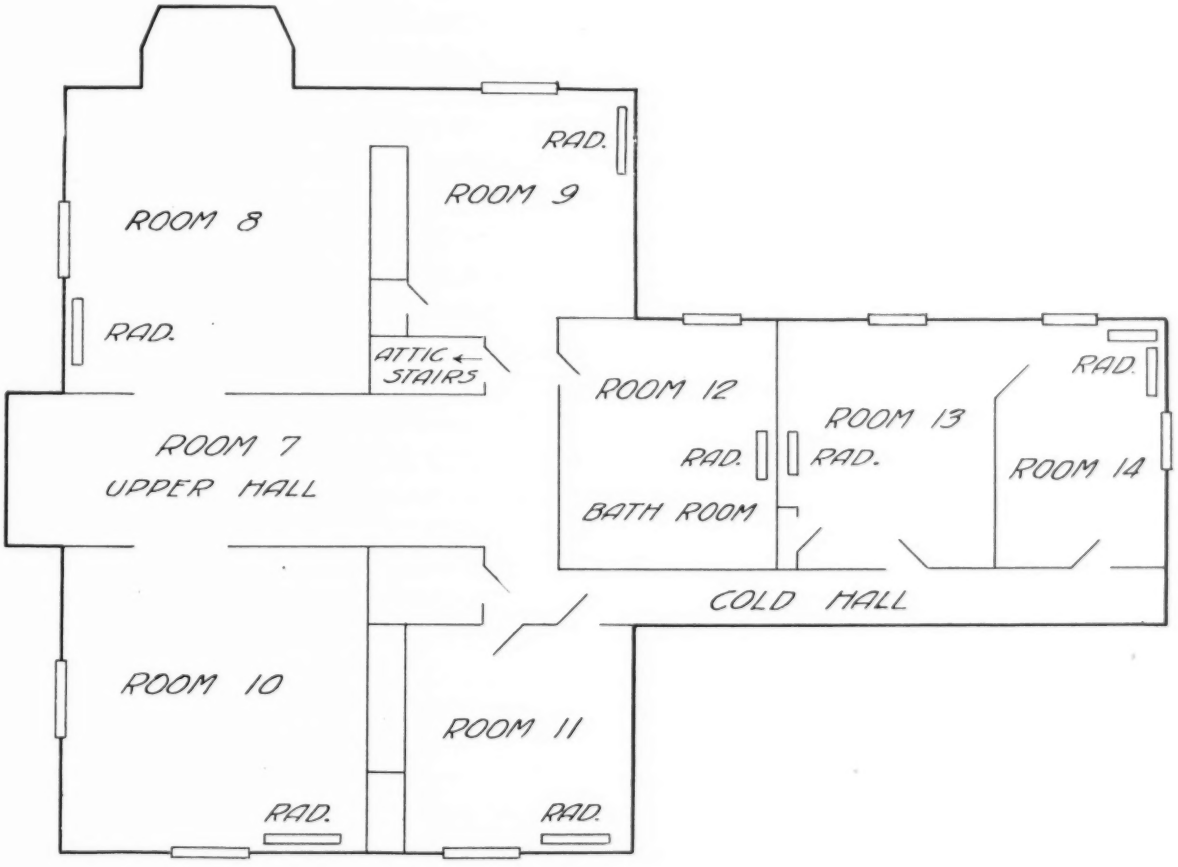
One cubic foot will weigh 60.55 lbs., and 14 lbs. is 0.231 of a cubic foot; or, in other words, 0.231 of 60.55 lbs. is required for each square foot of radiator surface. There are 1,032 square feet, therefore $1{,}032 \times 0.231 = 237$ cubic feet of water to move. By dividing the number of cubic feet of water to be used per hour, by the velocity with which the water moves, we shall find the area required in the pipe, with NO allowance for friction. $237 \div 4{,}377 = 0.541$ square feet.*

As there are 144 square inches in one square foot, we multiply 144 by 0.541 and find that the area is 7.79 inches.

This area does not provide for the friction of pipe and fittings, said friction causing the water to flow less freely.

Before we can proceed further we must make a rough or fine sketch of our proposed plan of piping, something as shown by Plan A. Having the rough sketch we measure, first, the length of the circuit and then add to that the length of pipe that the fittings equal in friction, as stated on page 135 of Pierce's "Practical Manual of Steam and Hot-Water Heating." When these are added we will have the equivalent of 450 feet of straight pipe, which will require the addition of 53 per cent to the 7.79 area, and requiring us to use a 4-inch pipe for the circuit. For $7.79 \times 1.53 = 11.918$ square inches, and the nearest commercial pipe is 4 inch, with an area of 12.566.*

The next thing to determine is the size of the risers. It is often the case that fitters put in such large pipe supply to the second and third floor radiators that they seriously hamper the efficiency of the radiators on the first floor.



Plan C. Second Floor Rooms.

*Page 287, Pierce's Practical Manual.

*For Velocity see pages 304-305, "Pierce's Practical Manual"; also Table NZ.; also Allen's "Notes on Heating and Ventilation", page 136, and Carpenter's "Heating and Ventilating Buildings", page 260.

*See page 12, Pierce's "Practical Manual of Steam and Hot Water Heating", or any Table of Area of Circles.

The reason for this is that the second and higher floors have a much longer drop from the return end of the radiator to the boiler than do the first floor radiators. For this reason the velocity, which is, other things being equal, controlled by the distance the water drops from the return end of the radiator, is much greater in the high radiators. And to equalize the flow to accord with the average which we have assumed for the building, in selecting the main pipe we must reduce the area of the piping to these upstairs radiators.

It is unfortunate that the radiator manufacturers have never corrected an error that was made when the old pipe radiators were originally set at one inch for forty feet of surface. If this limit instead of 40 feet had been set at 32 feet, a regular series of additions could have been made to the amount of surface that should be carried on different floors from the same size pipe.

From many experiments which have been made it seems safe to state, as a general rule, that the same size of pipe will carry an excess of surface on second floor over first of 35 per cent, third floor over first of 70 per cent, fourth floor over first of 100 per cent. In other words, if the limit of tapping for one-inch pipe was 32 square feet, an addition of 35 per cent could be safely made for each floor above the first up to and including the fourth.

This works out perfectly in practice as follows:

First floor, 32 square feet, tapped 1 inch.

35 per cent added: Second floor 44 square feet, tapped 1 inch.

70 per cent added: Third floor 52 square feet, tapped 1 inch.

105 per cent added: Fourth floor 65 square feet, tapped 1 inch.

What is true of radiators for hot water when the one-inch tapping stops at 32 feet, is also true of the commercial tappings as sent out. For instance, radiators containing 72 feet are tapped 1¼ inches.

First floor tapping 72 feet, tapped 1¼.
Second floor tapping 96 feet, tapped 1¼.
Third floor tapping 122 feet, tapped 1¼.
Fourth floor tapping 145 feet, tapped 1¼.

If there was more than the usual friction on either or all of these, the judgment of the fitter would permit him to use the tapping provided in the commercial schedule for radiators containing above 72 square feet.

By changing the one-inch tapping to 32 square feet and following the ratio of increase here noted, it is not often that anything except an equal distribution of circulation will occur, unless some excess of fittings are used in connection with the radiators.

On ordinary house jobs the commercial sizes of pipe do not run close enough to permit of figuring riser surface very much different than the commercial tappings provided regularly for the first floor, with such equalization as will be provided for by the increase in surface mentioned. I would not advise any riser on ordinary hot water jobs of less than one inch.

If a job is sealed to a higher pressure than that given an open tank system, the pipe size can be reduced to accord with the velocity that the sealed head will permit, and very much smaller pipe will be figured with equal success. A seal to 22 pounds pressure will secure the same velocity as a drop of 50 feet, or some 10,000 feet per hour. See page 304 Pierce's "Practical Manual."

In all cases, whether the job is sealed or not, the horizontal pipes that lead from the main to the risers must be at least one size larger than the riser.

There remains only a few words in regard to the way this piping shall be made up. Every end of every pipe must be fully reamed so that no burr can possibly remain. Wherever it is possible use long sweep elbows, or forty-five degree elbows rather than ninety degree in order to reduce friction.

The telling of all the reasons why the different things should be done has made a long story, but in actual practice the matters are soon reduced to forms that are quick to work. The chief point I have tried to make in this article is to explain **why** the different things are done.

In doing this I hope I have made clear to some perplexed student why the pipe sizes for heating varies to such an extent, and yet all seem to work well.

Almost any size pipe can be made to serve a hot water job if the fitter handling the work thoroughly understands the fundamental principles that I have tried to develop as governing the putting in of this job in this old house.

The use of fittings especially designed to reduce friction in hot water pipes is to be encouraged.

They are in practically all cases time-savers in the actual construction of the work. The present price of labor makes it a prime consideration in deciding upon the material to be used. An extra hour's labor, in cutting threads and fitting two tees in a line, beyond what it will cost for labor, if one fitting which will do the work of the two old-fashioned ones is used, will, almost without exception, make the net cost of the completed connection less for the patented fitting than the actual final cost of the old style fittings, and the decrease in the friction and increase in the symmetry of the work is not to be overlooked.

There are three special fittings that are worthy of special attention by hot water fitters, not only because of their adaptability but because of the great saving in labor which their use occasions.

On the main line of piping the Eureka Combination, the O. S. Fitting and the Phelps Combination, while differing from each other in construction, is each in its way designed for a similar purpose, and each, in its way, is of the utmost worth to the fitter.

Eight out of every ten jobs will be reduced in cost and decidedly improved in construction if, in different positions, the fitter uses all three of these patented fittings.

The friction is decidedly increased by using some of the recently patented fittings offered for sale as labor savers.

Fitters should examine the friction qualities of new devices with great care.

It is not necessary to go into the detail of construction, as the drawings show the manner in which different fittings were used on this old house job with sufficient clearness. A boiler of the sectional type, with a rated capacity of 2,000 square feet of radiation, was used in order that the firing period should be extended to twelve hour periods in moderate weather and to ten hour periods in the most severe weather. There are three openings on the boiler used, and all three are connected to the four inch circuit. This job has been run with perfect results through one winter. The coldest day of that winter showing an outside temperature of twenty-four below zero.

A telephone lineman was telling of the difficulties he had to meet in constructing a line through a certain rural district. The course laid out included the home of a farmer. After a long consultation, the old man and his wife decided to allow the wire to pass over the house, but with the restriction that no one was to use it after nine o'clock. "That's our bedtime," they explained, "and we don't want to be bothered with city folks talking late at night." The lineman undertook to keep the city folks quiet.

"Domestic Engineering" Cartoon on "Christmas in the Plumbing and Heating Trades"

Why Not a Christmas Window for the Plumber and Fitter?

Welding of High Pressure Pipe Lines*

By LEON B. JONES

Assistant Engineer, Gas Department, Pacific Gas & Electric Co., San Francisco, Cal.

SINCE the transmission of gas under high pressure has come into common use, many have been the dreams of the members of the gas fraternity of a faultless coupling.

Improvements in the manufacture of pipe, and the development of the seamless drawn steel tubing, leave little to be asked in the way of pipe, but as a chain is no stronger than

Fig. 1. Welding Two Sections in Ditch Where it is Impossible to Turn Pipe.

its weakest link, so is a pipe line no stronger than its weakest joint.

Heretofore the couplings or joints have been the short-lived part of high-pressure pipe lines. In practically all the couplings now in use, a compressible elastic gasket is necessary. Rubber has been used in joints of most of the pipe lines in California, but as the short time in which rubber loses its elasticity is greatly decreased by the rotting effect of the compression liquids of the gas, the life of rubber gasket joints is very much less than the life of the pipe.

Pipe lines have been abandoned or removed, because the elasticity of the rubber in the joints was gone, and every coupling was a leak, and still the pipe, if undisturbed, would have had a considerable life. In some cases the gaskets were removed after several years, and the pipe was still in good condition. Up to the present time the life of high-pressure pipe lines laid in the average soil has been the life of the joint.

With the recent developments in oxy-acetylene welding, a new era has been reached in the transmission of gas under high pressure. It is now possible to lay a pipe line without couplings of any sort. A steel-to-steel tube in which the joining of the lengths is of the same material as the pipe.

Welding with the oxy-acetylene torch has been successfully done in the large shops for several years, but the recent installation of an 8-in. high-pressure line in San Francisco is unique in the adoption of this process to the welding of high-pressure gas mains.

The oxy-acetylene torch develops a flame temperature which may conservatively be estimated at 6,000 deg. Fahr., and it may readily be seen that with this temperature concentrated in a small pencil flame, under perfect control, that all the metals become amenable to the will of the operator.

The welding of iron, steel, copper or brass is accomplished with greater ease and rapidity than the soldering of tin. When this powerful little flame impinges on steel, the metal becomes molten in a few seconds.

The recent installation of approximately 5,000 ft. of 8-in. steel tubing in San Francisco, in which the oxy-acetylene welding was used on every joint, was laid under the most difficult conditions, and afforded an excellent opportunity for practically testing the adaptability of welding to high-pressure gas mains. This line was laid in Geary street at the same time the municipal railroad was under construction, and this, necessarily, caused many obstructions and difficulties, but in every case the oxy-acetylene welding proved itself equal to the occasion, and all difficulties were surmounted.

There are three separate methods in which pipe may be handled when welding with the oxy-acetylene torch.

Bell holes may be dug as for any coupling, and the pipe welded in the ditch, or the pipe may be lowered into the ditch and turned while the welds are being made; thus the welding of many of the joints is done on the top of the

Fig. 2. Two Sections Being Welded in Ditch, Both Being Turned and Welding Done on Top of Joint.

pipe, and the necessity for digging large bell holes at every joint is avoided.

The third method, which was found to be the most practicable, where conditions will allow, is to put short pieces of timber across the top of the ditch at intervals and roll the pipe into places directly over the ditch. This method insures a good alignment of the joint, and requires the least labor. With this method two men can turn as much as 500

* A paper read before the Twentieth Annual Convention of the Pacific Coast Gas Association at San Diego, Sept. 17, 18 and 19, 1912.

ft. of pipe while the operator is welding the joints, and as 500 ft. is about as long as can be conveniently handled, it will thus only require a bell hole and a weld in the ditch every 500 ft.

While it is possible to make a good weld without turning the pipe, a great deal more time and care are necessary than when the pipe is turned, and the welding is always done on the top of the joint. In welding the under side of a joint in the ditch it is not possible to pile up the metal, as when welding is done on top of the joint. A joint being welded in the ditch is also more often allowed to cool before the weld is completed, and this leaves a possibility of pin holes where the weld is commenced again.

To insure against the possibility of the weld not extending through the entire thickness of the pipe, the ends of the lengths to be welded were left about ⅛ in. apart, and the operator worked with a rod of 3-16 in. Norway iron in his left hand. This iron is melted into the joint to take care of the gap, and also to build up the metal around the joint. In this way the ends of the pipe are perfectly welded, and the metal at the joint is thicker than in the pipe, thus making the joint the strongest part of the line.

To prove this statement that the weld is as strong, if not stronger, than the rest of the pipe, sample welds were made, and the pipe was afterwards flattened and bent until it was broken. In every case the break occurred back of the weld in the pipe and not across the joint.

A more practical test, which will appeal to gas men, was also made as follows:

Two 40-ft. lengths were supported on timbers laid across the ditch, and the ends welded together. All the supports were then removed from under one of the lengths, and the entire weight of this 40-ft. length was suspended on the joint. The weld was in no way affected by this severe treatment.

Fig. 3. Showing Section of Pipe Welded Ready to be Lowered Into Ditch.

After several hundred feet of pipe are welded into a section, the supports are removed one at a time, and the pipe reeled into the ditch like so much cable. Careful handling is no longer necessary, as a weld, if properly made, will stand the same treatment as the pipe, and any defect is better detected before the pipe is covered.

It may be readily seen that when welding the pipe on top of the ditch into sections several hundred feet long it is possible to work several welding outfits at the same time, with the minimum of labor. If a little care is exercised in distributing the pipe along the ditch, two men can readily roll it into place, over the ditch, for welding. In many cases, after these sections were reeled into the ditch, the ends of the sections were several feet apart. To avoid using a short piece of pipe and making two welds, a block and tackle was used, and with an automobile for a motive power, these sections,

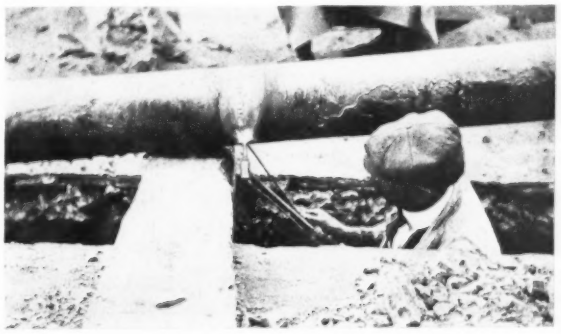


Fig. 4. Method Tried Out and Found to be More Expensive and Not so Feasible as Method Described.

in some cases 500 ft. long, were dragged several feet in the ditch to meet the end of the next section.

As the tubing which was used on this line was approximately 3-16 of an inch thick and would not permit of threading, the question arose as to how valves or governors should be connected. This was solved in a very simple manner. A short piece of 8-in. standard pipe was threaded onto a standard flange. The standard pipe, which was 8 in. inside diameter, was then slipped over the tubing, which was 8-in. outside diameter. After the valve of governor was installed, and the flanges bolted up, the end of the standard pipe was welded to the tubing.

This installation, which represented about 180 joints, was welded throughout its entire length. At the end of each day's work the line was tested to 150 lb. pressure and allowed to stand over night. As an extra precaution the joints were also gone over with soapsuds. After completion the entire line was tested to 150 lb. pressure. The line stood at this pressure for three days without loss.

The success of oxy-acetylene welding in the field of high-pressure gas distribution depends largely upon the cost of operation and its ability to meet the general conditions existing in high-pressure work. Such an apparatus to meet the requirements of the present-day gasman must be economical, reliable and safe.

Cheap electricity has made possible the use of the electric furnace for commercial products, and calcium carbide of excellent quality is now obtainable at a very reasonable price.

There are two general methods in which calcium carbide and water may be brought together for the purpose of generating acetylene gas—"water to carbide," or "carbide to water." Generators may, therefore, be classed as water feed or carbide feed. In the early stages of the development of acetylene, most of the generators were of the water to carbide, or water-feed type. This was due to the fact that it was far easier to regulate the flow of liquids than of solids.

However, practice has proven the carbide feed type to be the safest and also to produce the purest acetylene. In this type the carbide is fed into an excess of water, and therefore the temperature of the generators cannot exceed the boiling point of water, and the acetylene, in bubbling up through the lime water formed in the generator, is freed from most of its impurities.

The heat produced from 1 lb. of calcium carbide and the slacking of the calcium oxide formed is sufficient to raise 4 lbs. of water from the freezing point to the boiling point. It is, therefore, essential that the water in an acetylene generator shall always be in excess.

If a few general precautions are taken there need be no danger in the production of acetylene.

But the compression of acetylene is another story. One of

Fig. 5. Welding Upper Side of Pipe.

the dreams of the early acetylene industry was that this gas might be safely compressed into a liquid form for convenient transportation and storage. This would appear to be an ideal condition, as acetylene liquifies at the comparatively low pressure of 700 lb. per square inch, and a cubic foot of liquid acetylene represents 400 cu. ft. of gas. This liquid is only four-tenths as heavy as water.

It must be remembered that acetylene gas is an endothermic compound. In its formation heat is absorbed, and that spontaneous decomposition will take place, liberating this heat if subjected to abnormal temperature or pressure.

Many violent explosions have occurred due to liquefied acetylene, and now acetylene compressed in open containers to a pressure exceeding two atmospheres (30 lb.) is considered a very dangerous material.

However, calcium carbide represents a more condensed form of acetylene for transportation than the liquefied gas. A cubic foot of carbide represents about 500 cu. ft. of available gas, while a cubic foot of liquefied acetylene represents only 400 cu. ft. of gas.

Recent developments have also provided a substitute for liquid acetylene in what is known as dissolved acetylene.

While acetylene is soluble in its own volume of water, its very great solubility in acetone has broadened the field of the uses of acetylene many fold. Acetone will dissolve 24 times its volume of acetylene at atmospheric pressure, and for each additional atmosphere to which it is subjected, a similar quantity will be dissolved; in other words, the solubility increases directly with the increase in pressure.

Dissolved acetylene makes possible hundreds of uses of acetylene and the oxy-acetylene blow pipe, which would have been impossible before its discovery.

With the use of dissolved acetylene and oxygen under pressure, a complete oxy-acetylene welding outfit is very readily portable and ready for instant use and can be used in many places where a generator would be impracticable or impossible. When acetylene is dissolved in acetone it seems to be devoid of all possibility of an endothermic explosion under pressure. But the bulk of acetone is greatly expanded by this great absorption of acetylene, and it will readily be seen that any container used for acetone for the dissolving of acetylene must be in capacity equal to the acetone expanded.

As the acetylene was used from such a container and the acetone contracted to its normal bulk, open spaces would be left above the liquid in which free or undissolved acetylene would exist, and thus create danger from explosion. This is overcome by the use of a porous solid which is inert to the acetone and also to the acetylene.

Asbestos is adaptable for this purpose, and as it is from 75 to 80 per cent porous the tanks can be packed to exclude all possibility of open spaces for free or undissolved acetylene, and yet leave the greater part of its capacity for acetone and dissolved acetylene.

Calcium carbide can now be obtained at 5 cents per pound, and as a pound of carbide will produce 5 cu. ft. of acetylene, the cost of acetylene will be 1 per cent per cubic foot at the generator; with an additional cost for compression if it is desired to use dissolved acetylene from tanks under pressure.

Until the introduction of the autogenous or oxy-acetylene welding practically all of the oxygen used in the United States was used for medical purposes and consequently exorbitant prices were obtainable. But since the entrance of oxygen into the commercial field many fertile minds have been busy with the problem of its economical production. Probably the most widely known method is from the reaction of certain chemicals. Oxygen is easily obtained by heating chlorate of potash or chlorate of soda, but as the reactions take place violently, with the resultant release of all the oxygen at once, the reaction is impeded by the addition of one-quarter part of black dioxide of manganese. With the addition of the manganese dioxide, the oxygen is given off continuously until the reaction is complete.

Another method is the use of chloride of lime and copper sulphate, with the addition of iron sulphate as a catalyzer.

But as the use of chemicals for the production of oxygen is not feasible on a large scale and the economy limited by the price of the chemicals, other methods must be resorted to.

Oxygen may be very cheaply produced by the liquefaction and distillation of air. The air is liquefied by high pressure

Fig. 6. Beginning to Weld a Joint.

and low temperature, and the oxygen and nitrogen separated by distillation due to their difference in boiling points. This is probably the most economical method of producing oxygen, as there is an unlimited market for the residual nitrogen as a fertilizer. This method requires an extensive and expensive outlay for equipment, and the market for oxygen has not, as yet, warranted the installation of such a plant in the United

States, although oxygen has been produced in large quantities in this way in Europe for several years.

Another method which is probably the most promising of cheap oxygen in the near future is the electrolysis of water, or the dissociation of water by the use of electricity. The cost of production of electrolytic oxygen is directly dependent upon the cost of electric energy. The cost of equipment for this method of production is not prohibitive, and with the prevailing low prices of electricity, oxygen should be obtainable in the near future at a cost not to exceed 2½ cents per cubic foot.

Acetylene gas of all the hydro-carbon gases most nearly approaches pure carbon. It is over 92 per cent carbon and has a heat value of 1,685 B. t. u. per cubic foot, and this partly explains the remarkable temperature attained with the oxy-acetylene blow pipe.

Acetylene requires for complete combustion 12½ times its volume of air, or 2½ times its volume of pure oxygen. If

Fig. 7. Method Tried Out and Found to be More Expensive and Not so Feasible as Method Described.

complete combustion were attained by burning acetylene with 2½ times its volume of oxygen the products of combustion would be carbonic acid and water.

However, it has been practically proven that the best welding results are obtained by the use of slightly over one and one-quarter volumes of oxygen to one volume of acetylene, and with this incomplete combustion the products of combustion change, and instead of carbonic acid and water being formed carbon monoxide and hydrogen are formed. To this formation of hydrogen which surrounds and envelops the point of welding, is attributed the credit for the fact that the oxy-acetylene, unlike many of the methods of welding, has no injurious effect on the metal.

From the foregoing it will be seen that the cost of the oxygen for the oxy-acetylene torch is materially less than would be calculated. The torch used for oxy-acetylene welding is constructed upon the injector principle in which the oxygen and acetylene are conveyed through separate tubes to within an inch of the point of combustion. The acetylene is usually conveyed direct from the generator through hose connections to the torch at a pressure between 3 and 5 lb. per square inch. The oxygen is stored in tanks and is used through a reducing valve and hose connections to the torch at between 15 and 20 lb. per square inch. On the handle of the torch are controlling valves whereby a nicer regulation is attained. For lighting the torch the acetylene is first turned on full and lighted. Oxygen is then added until the flame becomes a single cone. An excess of acetylene produces two cones and a white color, while an excess of oxygen produces a violet tint.

The hourly consumption of the torch used for 8-in. steel tubing was 24 cu. ft. of acetylene and 30 cu. ft. of oxygen. Using acetylene direct from the generator at a cost of 1 cent per cubic foot and oxygen from tanks at 6 cents per cubic foot, at which price it is now available in San Francisco, the cost of operating the torch would be $2.04 per hour, and allowing 40 cents per hour for the labor of an operator, the total cost of operation would be $2.44 per hour. As the average time necessary to weld a joint on top of the ditch where the welding is done on top of the pipe is ten minutes, the cost of such welds would be slightly over 40 cents per joint. The time necessary to weld a joint in the ditch where the operator was forced to weld underneath the pipe was 28 minutes per joint, making the cost of these joints $1.13 per joint. But if the pipe is welded into long sections on the ground it is only necessary to have a weld in the ditch to every ten joints welded on the ground. This would make an average cost of 49 cents per joint. This would be approximately 2 cents per inch of circumference on steel tubing 3-16 of an inch thick and from this can be estimated the cost of welding various sizes and thicknesses of pipe as the time per weld and consumption of oxygen and acetylene will increase in proportion to the size and weight of the pipe.

Since the work has been completed, it has been found that oxygen and compressed acetylene in tanks can be had very much cheaper than the figures given above. One company is in a position to furnish compressed acetylene in large tanks at the very reasonable figure of two cents per cubic foot. With this low figure one would not be justified in using an acetylene generator for high pressure pipe lines where it is desired to make the apparatus portable, as acetylene gas made in a generator cannot be produced for much less than two cents per foot.

SECOND NATIONAL CONFERENCE ON HOUSING IN AMERICA.

Beginning on Wednesday, December 4th, and continuing Thursday and Friday of this week, there was held at Philadelphia a conference on Housing Conditions in America, which ought to produce some beneficial results. Representatives were in attendance from all over the country. Trips of inspection were made to inspect the housing conditions in Philadelphia. Papers were read by Charles B. Ball, chief sanitary inspector of the Health Department of Chicago, on "Health Departments and Housing"; by Grosvenor Atterbury, Fellow American Institute of Architects, of New York, on "Garden Cities"; by Mrs. Johanna von Wagner, a member of the Housing Commission of Los Angeles, on "Instructive Sanitary Inspection"; and by Andrew Wright Crawford, Philadelphia, on "Property Division, Lot Depths, Height Regulation." Among those who also read papers were Thomas J. Fitzmorris, Omaha; Elmer S. Forbes, Boston; Lawrence Veiller, New York, and John Nolen of Boston. Many discussions were a part of the program, and various phases of sanitation, plumbing and heating were brought out.

Folks who harp on one string are not necessarily angels—they may be harpies.—Elbert Hubbard.

On going over the tracks of a small railroad, I noticed that the section foreman had only a single helper.

"Has the company reduced your gang to one man?" I asked.

"Yes," said he, "and they also instruct me to keep my forces well scattered!"

Another Side to the Percentage Question

Many Plumbing and Heating Contracts Are Now Being Taken on the Percentage Basis. Some of the Abuses of This System Were Discussed in a Recent Number

By G. D. CRAIN, Jr.

ONE of the remarks for which Grover Cleveland is best remembered is, "We are facing a condition and not a theory." That is the situation regarding the use of the percentage system in plumbing work, for the application of the idea is growing so steadily as to indicate that it is likely to continue to be used, and to be applied to more and more jobs all the time.

The truth of this statement will be realized when it is noted that in one large city of the Middle West a leading plumber installed over $50,000 worth of work this year on the percentage basis; while the second largest job handled in the community during the year was let in that way. The system is growing; it is an actual condition and not a theory; and to oppose it absolutely and refuse to have anything to do with it cannot possibly improve matters.

The resolutions recently adopted by the Merchant Plumbers' Association of Los Angeles, Cal., which have been given considerable prominence, do not denounce the percentage system, be it noted; but merely oppose, as is perfectly proper and legitimate, the unscrupulous methods which it is declared some plumbers have used in order to increase their profits on a given job. That the system is open to abuse cannot be denied; but on the other hand, it must be remembered that it is just as easy for a contractor to rob an owner when he has been given a job under a system of competitive bidding as when he is working on the percentage basis.

Dishonesty should not be tolerated in any part of the business, and the action of the Central Supply Association, which was referred to by the Los Angeles members of the trade, was a fine expression of the prevailing sentiment against lowering the standard of square dealing under which the vast majority of plumbers are working. It is the exceptional member of the trade who is anxious to take an unfair advantage of the owner; and consequently to say that the percentage system permits abuses to creep in is merely to call attention to the fact that these occasional rogues are in the business competing with those who prefer to do business on the right principles.

As a matter of fact, however, the percentage system is calculated to eliminate trade abuses, such as padding bills for supplies and labor, rather than it is to cultivate them, for the reason that the owner who uses this plan is much more likely to choose a plumber according to his reputation for business integrity, skill and right dealings than because he works at a low price. On the other hand, when competitive bidding is the method used in determining who is to install a job of plumbing, the architect and owner have comparatively little leeway; they are almost compelled to give the work to the lowest bidder, no matter who he may be. The fact that occasionally this principle is disregarded and the plumber who bid higher than his competitors gets the work is enough of an exception to give point to the rule.

There is many an owner who knows someone in the business, and regards him as a high-class business man. He gets ready to build a house, and if the contracts are let in detail he indicates to his architect that he wants his friend to have a chance at the work. Figures are made up, and the acquaintance of the owner puts in a bid which will give him a fair profit on his work. Some other fellow, with a little alley shop, no reputation and little financial responsibility, sees a chance to make something at a lower figure than others have estimated the job to be worth, and submits his bid. Architects and owners are not always careful to investigate the ability and responsibility of plumbers, any more than they are of carpenters or bricklayers; and in the case of a big discrepancy in the bid, the man in the back-alley shop is pretty sure to land the business.

This is not to say that only the big plumbers can do good work. On the other hand, some of the most skillful members of the trade are graduates of the journeyman class, who have started in a small way in an inconspicuous location and with comparatively small equipment. But it is well known that most of the abuses which have arisen in the business are due to the operations of the irresponsible, ill-equipped plumber who has little excuse for being in the business, and who is just as likely to botch a job as he is to get away with it in fine style.

The competitive bidding system puts a premium on the services of this type of man, because he is able to do the work cheaper than anybody else in his community. The percentage system eliminates him, because the work is given to the concern which has a good reputation, which has had experience and which has been proved by the acid test of time. The house of quality gets a chance at quality jobs, and the untried, one-horse shop, which is running on little besides nerve and an exceedingly sharp pencil when it comes to making bids, is ruled out on the ground of ineligibility.

These are facts. They are the fundamental principles back of the growing use of the percentage plan of having work performed, and, for the reason that the owner is more likely to get satisfactory results under it than in any other way, there seems to be every good reason for expecting the idea to make headway in the plumbing business, as it has in other departments of the contracting field. And there are other advantages equally worth considering.

One of them is that important work, which must be finished in a comparatively short time, can be disposed of much more rapidly under this system than any other. Take a big building job, which is to be turned over to the owners at a given time. Suppose that it is a hotel, and the owners are anxious to have it completed in time to take care of a large convention. It is necessary to make haste, and the architect endeavors to do his part. But if he has to make up detailed specifications, send them out to a large number of plumbing contractors, await a reasonable time for estimates and then compare these in detail before letting a contract, so much time will be lost before a man is put on the job that it will be impossible to get through as soon as desired.

The solution is the percentage system. Under this plan the architect and owner call into conference the plumber in whom they have confidence, and who they know will do the work just right. In a job of this character results are more important than the expense. Hence the firm which is best fitted to turn out a high-grade job is the one decided upon. No formal specifications have been

drawn up, though the owner and architect know about what they want. They run over the various features of the job, giving the number of fixtures, the character of the baths and lavatories, and then propose that the plumber undertake to handle the work on a percentage basis. If an agreement is reached, the job can be begun at once, and men put to work with the loss of but a few hours, for with the blue-prints in hand, the specifications may be given verbally as the work progresses. Several weeks, at least, are saved, and the job can be turned over in completed form within the limit set, and this without any mad haste such as usually produces less satisfactory results than when ample time is given.

Then, again, on a big remodeling job, where the detail work to be done cannot be definitely determined in advance, and where it is desirable to carry along the contract rapidly, outlining what is needed just as occasion permits, there is no other practicable method of handling the work than adopting the percentage system. One of the leading newspapers of the country has just moved into a magnificent building, a block east of its old quarters. The new building is not new in the sense of being an entirely recent structure; but is the rejuvenation, so to speak, of the old postoffice, erected over half a century ago. It was used as a warehouse for several years, later on being puschased by the newspaper and converted into a publishing plant. The walls were left standing, but the entire interior was remodeled. The proposition was an unusually elaborate and complicated one, requiring a number of changes as it was carried forward. It is significant that the contract was placed on a percentage basis, and that everybody concerned was satisfied when it was concluded. The plumber made a fair profit—of which he was assured in advance—the newspaper got a splendid plumbing installation and the architect was assured that he had done his professional duty by holding down the cost to reasonable figures.

One of the machinery concerns in the contracting field put out a calendar a few years ago which was so characteristic of conditions that it has been retained until now by many members of that trade, though it passed its term of actual utility several years ago. It is marked by a drawing showing a successful bidder holding in his hand the announcement that he has been awarded an important contract. "What have I forgotten?" exclaims the successful (?) contractor, with his hair rising. Every plumber can appreciate the feeling of this contractor, for the most expert and careful estimator realizes that there are plenty of ways to overlook an important feature of a contract, and consequently to enter a bid which is too low by just the amount which has not been taken into consideration.

The percentage system avoids the possibility of loss in this connection. The plumber can go into a job with his mind freed of the eternal question, "Did I overlook anything in making up my estimates?" He knows that he is going to be paid for every cent's worth of material and every minute of time put in on the work, plus a fair profit, and he can devote himself wholly to the question of giving the owner the best he has in stock, knowing that there is no chance for him to come out at the small end of the horn.

And right here is another point. The percentage idea gets away from the matter of "extras." Speaking of abuses, here is one which the owner has learned to shy at. The average person has heard enough of the experiences of his friends to know that a building job always costs more than it was expected to cost, the reason being that the cost of the "extras" was enormous, and that they had to be paid for, because the things provided for at the eleventh hour, after contracts had been let and work begun, simply couldn't be left out.

All that sort of thing has a deterrent effect on the prospective home-builder, and without question reduces the amount of new work which is offered. If the owner knows that by paying a flat percentage above the actual cost of the work he can buy "extras" at their real value, instead of having to let the close-figuring contractor make his profit out of them, he is much more likely to bring his castle in the air down to real earth and decide to spend a few thousands on a home.

Many owners and architects favor the plan of dividing the savings made on a job handled in this way. That is to say, the architect fixes an amount which in his judgment is what the work ought to cost. The contractor who takes it is given an opportunity to earn something above his commission by cutting down the costs of the work. Fifty per cent of the saving made is to go to the owner, the rest to him. For example, if the estimated cost of a plumbing installation is $1,500, and the plumber has taken the job on a 15 per cent basis, his actual profit, if the cost of labor and material is $1,000, is $150, making the total cost of the work $1,150. This is $350 less than the estimated cost; and under this arrangement the plumber gets $175 more, making his total profit $325—a handsome showing on a job of that size.

This plan furnishes a spur to the plumber in that he is encouraged to cut all the corners he legitimately can, and to get the best results at the smallest outlay of expense. It makes the interests of the owner and the contractor mutual, as they ought to be; and it makes it unnecessary to pad a bill or fake a labor account in order to get the profit to which the plumber feels he is entitled. It is a first-class, legitimate, honorable and successful way of making more than a normal profit out of a job; and incidentally it is the sort of plan which tends to bring the owner back to that place for more work.

The percentage system may be abused by the unscrupulous; it may be made the vehicle for all sorts of jockeying in arriving at the figure upon which to accept work handled in that way; but obviously, in view of the many advantages of the plan, and the unquestioned fact that it is coming into more general use, the solution of the problem lies in regulating it, rather than opposing it; and in standardizing the practices connected with it, instead of attempting to make it taboo.

MASTER PLUMBER'S SON SWORN IN AS A JUDGE.

With other county and city officials of Chicago, Edward T. Wade, son of James J. Wade, well-known master plumber and manufacturer, was inaugurated as a municipal court judge last Monday at the county building. Flowers and oratory marked the inaugural ceremonies. Judge Wade received from friends and admirers an exquisite floral tribute about five feet square, representing the scales of justice. The offering is estimated to have cost about $300. After the ceremonies it was taken from the courtroom and placed in the front part of his father's business office on Harrison Street. The fact that Judge Wade is the son of a master plumber reflects credit on the members of the craft. The elder Wade is to be congratulated on his fatherly ability in rearing so clean-cut and able a young man as Judge Wade, whose coming career as a jurist will be watched with interest. Surely a master plumber's home is an excellent place for the proper training of sons—and daughters as well, we may fittingly add.

Questions and Answers

QUESTION ABOUT AIR-MOISTENING.

Editor "Domestic Engineering": I have a hot water plant installed in a house and would like you to tell me if there is any way of moistening the air in that house now that the installation is completed.

Guilford, Conn. F. B. C.

The moistening of the air in the room can be effected just about as easily and uncertainly after the hot water job is installed, as before.

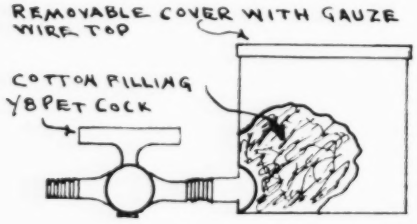


Fig. 1.

Several years ago an air moistening device for steam and water radiators was placed on the market, (and a skirmish among the heating shops would show about 90 per cent of the devices still in stock) that was intended

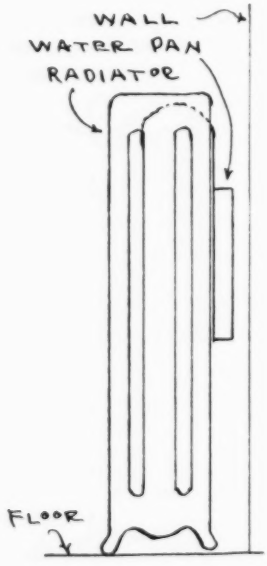


Fig. 2.

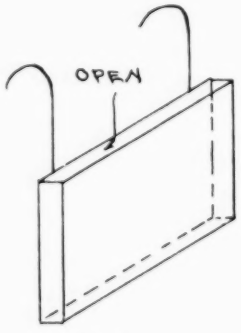


Fig. 3.

to screw into the air vent tapping, and by opening the pet cock, sufficient water or steam was admitted to the device, to moisten the cotton filling to the point where it would moisten the room air to almost any point desired(?). Fig. 1 is one half the actual size, and illustrates the principle. You can draw your own conclusions as to how well it filled the above claim. It was further claimed, that by sprinkling a few drops of perfume over the filling, one could fill the house with any odor desired. It will really do this to perfection. It should have been called a "Perfume Spreader" instead of an "Air Moistener."

Figs. 2 and 3 illustrate a device that you can make in your shop, and which will moisten the air to some extent. Made out of galvanized iron and decorated to match the radiator. It is about 12 inches long, 8 inches deep, and 1 inch wide. This is placed behind the radiator and supported by strap hangers as shown in Fig. 3. It is nearly filled with water and the heat of the radiator does the rest. Just how much this really moistens the air is a matter of conjecture. Your hot air furnace work should give you some idea along this line, as it acts very much in the same manner as the water pan in a furnace. There must be some unusual conditions in the house in which you have installed the hot water job, as the ordinary water job does not heat the room air to that stage where it is necessary to moisten the air, or it may be that your client imagines such to be the case.

SOMETHING WRONG WITH THE SIPHON.

Editor "Domestic Engineering": Enclosed find rough sketch of pipe line from well in field which we are unable to make siphon. Will you kindly help us out in this matter, if possible? We had good luck with this line for about seven months, then the siphon suddenly stopped. Please give us information on the matter, also advise if there is

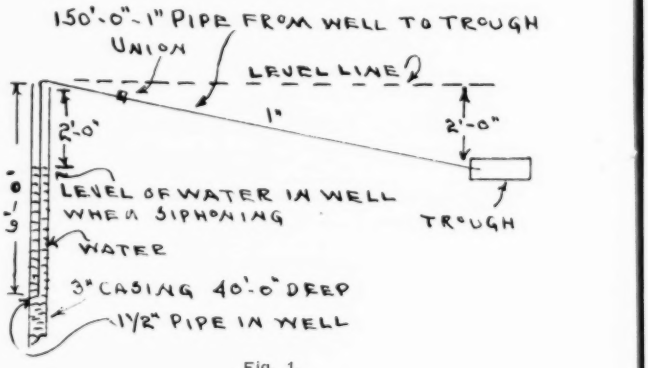


Fig. 1.

anything on the market that would draw water from a well without the aid of power, such as steam, gasoline or electricity, at a nominal expense.

Oakland, Cal. M. J. W.

If the above line worked successfully for over 7 months, the only reasons we can see that might cause it to stop are: 1. A stoppage in the pipe. 2. A leak in the pipe line. 3. Line sagging, and forming air pockets. 4. An accumulation of air at the bend where pipe leaves well. 5. Lowering of the water in the well. Your sketch shows the water in the well at two feet below an imaginary level line from the well to the trough, and the outlet of the pipe at trough as two feet below this line. This would make the water in the well and the trough, at the same level. You are mistaken in this, for if such were the case, you never could get any water from the well to the trough. The end in the trough, or the long leg of the siphon, must be lower than the short leg of the siphon, or the end in the well. Siphonage is caused by the falling water in the long leg producing a partial vacuum in the line, and, as "nature abhors a vacuum," the atmospheric

pressure, 14.7 lbs., bearing down on the surface of the water in the well, forces the water into this partial vacuum, and the result is, water flows into the trough. You will probably find your trouble to be among the reasons given above, and after remedying same, the siphon should work as well as it ever did. We presume you start the siphon by capping the end of the pipe in the trough and then fill the 1-in. line up to the union, and after making the union joint tight again, remove the cap. This should start it. Regarding that portion of your query where you say, "is there anything on the market that will draw water from a well without the use of power, such as steam, gasoline, or electricity," about the only thing you can use is a windmill, or a hand pump, as you practically eliminate the use of any other power.

FAULTY HOT-WATER INSTALLATION.

Editor "Domestic Engineering": The enclosed rough sketch shows an installation of two hot water boilers, one in basement and one on first floor. When the range in kitchen is used, the hot water faucets will bring cold water. When the furnace or laundry heater is used, the

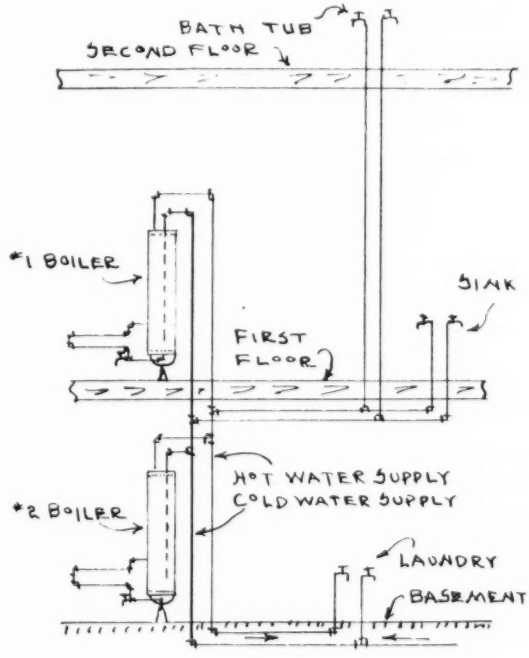


Fig. 1.

hot water will flow all right. Will you kindly point out where the defect in connection is, and oblige?

Fairbury, Neb. S. G. J.

Figure 1 illustrates the installation as it now is. Here is what will have to happen when you have fire in the furnace; hot water flows freely at the hot water faucets. Here is what happens when you have fire in the range: cold water is drawn from the hot water piping at the top of the basement boiler, into the hot water piping, and cold water flows at the hot water faucets. The kitchen boiler has no chance to deliver hot water at the faucets, as you made the finest kind of a "bypass," that it is possible to make. The water simply follows the line of least resistance. We would advise you to cut out the basement boiler and connect the basement coil as shown in Fig. 2.

This can be done very easily and you will always get hot water at the faucets. We are unable to understand why the basement boiler was ever installed anyhow, as

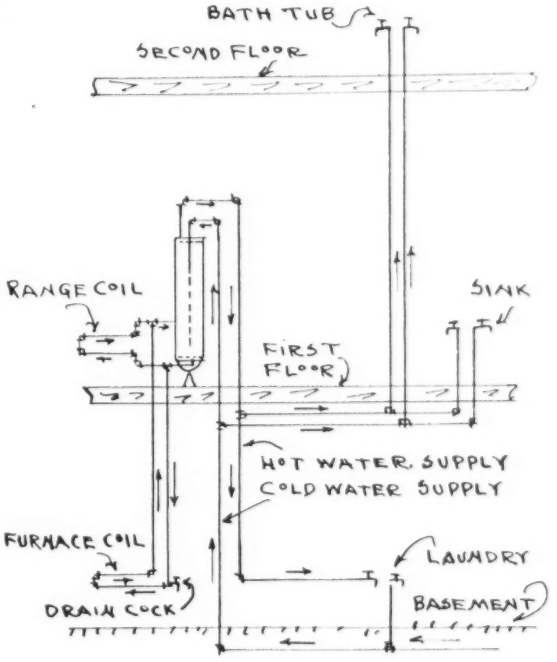


Fig. 2.

it is both useless and a detriment to the proper working of the job. Make the changes as shown in Fig. 2 and your trouble will be ended.

January 14, 15 and 16, 1913.—Annual convention of the Iowa Master Plumbers' Association, at Sioux City, Ia. The officers of the association are: President, Robert Knauer, Des Moines; vice-president, Frank Vallers, Keokuk; treasurer, J. N. Gearen, Sioux City; secretary, Wm. B. McCarten, Dubuque.

January 28, 29 and 30, 1913.—Annual convention of the Illinois Master Plumbers' Association, at Springfield, Ill. The officers of the association are: President, W. J. Hilliard, Elmhurst; first vice-president, C. D. Brownell, Champaign; second vice-president, Bernard Gause, Jacksonville; treasurer, O. W. Dawson, Decatur; secretary, W. C. Haviland, Aurora.

Joseph Eiden, who has conducted a plumbing business at Oconomowoc, Wis., for the past twenty-five years, died at his home in that city on Saturday, November 16th, after a long illness. Mr. Eiden was born in Germany and came to Wisconsin in his youth. He is survived by his wife and five children.

LEGAL DECISIONS

Failure to Appoint Examining Board Excuses Plumbers.

The Third Appelate Division of the Supreme Court of New York says that the plaintiff in the case of Meade vs. Lamarche, 134 New York Supplement, 479, was a plumber carrying on his business in the city of Plattsburgh and brought the action for services and materials furnished by him in that city to the defendant. The complaint did not allege that the plaintiff had obtained a certificate of competency from an examining board of plumbers of such city, or that he had registered his name and address at the office of its board of health of such city, as prescribed by sections 45 and 46 of the General City Law of New York. At the close of the plaintiff's proofs a motion for nonsuit was made specifying specifically such ground.

It was stipulated upon the trial that the mayor of the city of Plattsburgh had never appointed an examining board of plumbers for that city, as required by section 40 of the General City law, and that therefore no board existed from which the plaintiff could obtain a certificate of competency to carry on his business, and, not having such certificate, he could not register his name and address in the office of the board of health.

The referee before whom the action was tried held that, because there was no board in existence before which the plaintiff could have an examination and obtain a certificate, he was excused from obtaining such certificate and from registering with the board of health and was relieved from the requirements of the law. The court thinks that such conclusion was correct. By section 40 of the General City Law it is provided that the mayor of each city in the state shall appoint an examining board of plumbers for his city, consisting of five persons, whose qualifications are specified. The mayor thus by law became a part of the machinery of the state through which examination of plumbers was to be held. The Legislature delegated certain powers to him expecting that he would exercise them and thus realize and make effective its law enacted for the protection of the inhabitants of large communities in securing to them proper and healthful sanitation. It would not have been the intention of the Legislature to visit the penalties of the law upon plumbers in those cities where the mayor refused to exercise his function of appointing a board of examiners. The situation presented was not like that of the temporary disability or absence of the appointing or licensing power. In such case the law is in full force and the applicant must await his opportunity. In the present case the state, through the default of the mayor, never gave life to the law so far as the city of Plattsburgh was concerned, because it was never made possible for plumbers in that city to comply with it. A citizen should not be made to suffer the penalties of a law which the state itself has made it impossible for him to obey. If the law be held to apply in the city of Plattsburgh, plumbers must close their shops, and the inhabitants must be deprived of their services until such time as the mayor may see fit to appoint a board which can examine applicants so that they may register in the office of the board of health.

The plaintiff offered in evidence a certificate of competency obtained by him from the board of examiners in the city of New York when he was in business in that city; but it was properly rejected because it availed him nothing and did not entitle him to register with the board of health of the city of Plattsburgh.

There being no board of examiners, and it being impossible for the plaintiff to obtain a certificate of competency, his position was in effect as though an impossibility of performance had been created by law. Neglect to conform to the law on the part of the mayor made it impossible for him to conform.

Had there been a board of examiners, the plaintiff would have been compelled to obtain a certificate of competency and to register his name and address with the board of health of the city, and plead and prove that fact in order to maintain his action.

It was no answer to say that the plaintiff could have compelled the mayor by mandamus to appoint a board of examiners. He was under no more obligation to do it than any citizen, and he did not lose his rights by his failure to institute such proceeding.

Wherefore, a judgment in favor of the plaintiff should be affirmed, with costs.

Notice of Lien for Plumbing Not Filed in Time.

One Alton contracted on October 1, 1909, to erect a dwelling for a man named Seeder within 30 days, and a firm of plumbers contracted with him to do the plumbing. They did the work, and on January 6, 1910, filed notice of lien in the office of the county clerk for the sum of $175, the price therefor, contending that the building was completed on December 24, 1909. Defendant Seeder, however, alleged that the building was completed on November 2, 1909, and therefore that the notice of lien was not filed within the time provided by the Oregon law and was ineffectual. The testimony on behalf of Seeder tended to show that the building was completed and received by him on November 2, 1909; that he moved into it on that date; and that no work was done thereon thereafter. The plumbing, except the terra cotta sewer pipe, was completed on October 15th, and it did not appear that any other work was done by the plaintiff plumbers after that date, except that they uncovered the sewer pipe, connecting the house with the cesspool, namely, 8 or 10 feet, on December 20th, that the city inspector might examine it. The plaintiffs' testimony was that they were to connect the house with the cesspool, and did furnish the terra cotta pipe for that purpose. Defendant Seeder said that the contractor was not to so connect with the cesspool, and it was conceded that Seeder did the work and covered the pipe without inspection, and that the city inspector notified the Plaintiffs to uncover it. The evidence did not show whether the sewer pipe was connected with the cesspool before or after November 2d; but it must have been done before that date, or the basins and sinks could not have been used by Seeder after he moved into the house. In short, it was not established that the house was not completed before November 2d, unless the uncovering of the sewer pipe constituted such completion. The

Supreme Court of Oregon, in reversing, in Schade vs. Alton and others, 121 Pacific Reporter, 898, a decree rendered in favor of the plumbers and dismissing their suit, said that the uncovering of the sewer pipe was certainly not construction work, but work occasioned by reason of the fact that the work was not inspected before it was covered. In support of its position it quotes from a prior decision, in Sarchet vs. Legg, 118 Pac. R. 203, where it was said, "In order to protect laborers and materialmen, our statute makes ample provision, and should be liberally construed in their favor, on the ground that the enactment is remedial. Where, however, the rights of an owner, who, relying upon the completion of the building, has paid the contract price, or of an innocent grantee of the premises, become involved, such trifling things as the fastening of an electric switch or placing of a pipe through a wall should not be regarded as incidents in the completion of a building, but as repairs."

The Metal Market

MORE ACTIVITY IN PIG IRON.

The largest sale of the week was 20,000 tons of foundry and basic from Buffalo makers to the Candian Car & Foundry Co. This went at a new high figure. Leading consumers of steel-making irons have been buying ore and other materials in the West. The freight rates do not appear to cut as much of a figure as they did earlier in the year. The great call now is to get the material. In the Southern market, prices are somewhat higher, $15 being demanded for first-quarter delivery, and there is not a large amount of iron for sale even at that figure. The Southern markets are dull. The only large sale that has been made recently was 5,000 tons of foundry by the Tennessee Coal, Iron & Railroad Co. for export to Genoa, Italy. Most of the purchases this week have been lots of 500 tons and thereabouts and most of these were for forward shipment. The situation as regards fuel is puzzling. Sales of foundry coke for forward delivery are made at $4, but prompt delivery commands $4.75. These are very high prices for coke and indicate much higher prices for pig iron, especially when furnace coke is selling at around $4 per net ton at the oven. The output of coke is large, aggregating about 400,000 tons weekly in the upper and lower Connellsville region.

Quotations are as follows:

Northern foundry No. 1, New York	$18.50 to $18.75
Northern foundry No. 2X, New York	18.25 to 18.50
Southern foundry No. 2, Birmingham	15.00
Southern foundry, No. 2, Cincinnati	17.25 to 17.75
Northern foundry No. 2, Chicago	18.00

COPPER.

Little new business has been transacted this week. Domestic consumers are only buying in small lots, but these orders are being placed at 17.75 cents, New York. In Europe there is more interest in the market and there has been heavy buying, for exports are now larger. It is probable that in December the exports will be as large as any month this year, and European consumers will continue to buy as much metal as they have heretofore

TIN.

The statistics of the tin trade show that tin will shortly be classed as a precious metal unless some substitute is found. Supplies which have been gradually decreasing for the last decade are now rapidly diminishing. Three years ago there was a visible supply throughout the world of about 18,000 tons; last year it was 13,000 tons, and the first of this month it was less than 5,000 tons. Consumption is larger than ever before, but production is going backward. Prices of tin are slightly higher at around 52 cents per pound.

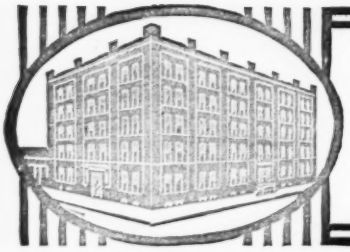
OLD METALS.

New York dealers' buying prices are as follows:

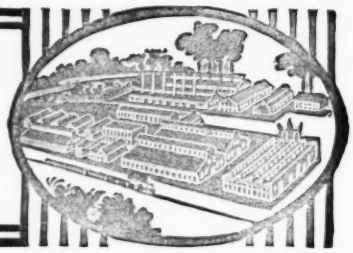
Light copper	$13.50 to $14.00
Strictly crucible copper	15.75 to 16.00
Uncrucibled heavy copper	15.00 to 15.25
Uncrucibled copper wire	15.00 to 15.25
No. 1 machine composition	12.75 to 13.00
No. 1 composition turnings	11.50 to 12.00
Cocks and faucets	10.50 to 11.00
Light brass	7.75 to 8.00
Heavy yellow brass	9.00 to 9.25
Heavy lead	4.00 to 4.10
Tea lead	3.70 to 3.75
Close cut solder joints	9.25 to 9.50

MASSACHUSETTS PLUMBERS' LICENSE LAW DECLARED CONSTITUTIONAL.

The supreme court of Massachusetts has decided that a statute requiring plumbers to be licensed and registered before doing plumbing work is constitutional. A decision to this effect was handed down by the full bench in the case of Raphael Beaulieu, accused of doing such work in violation of the statutes. Beaulieu claimed that he had a right to work at his will and to earn his living at any lawful trade or occupation he saw fit, and that the statute interfered unduly with that right, and was therefore unconstitutional. The court holds that, sacred as that right may be, it is not absolute. Like almost every individual right, it must yield to the right of the government to impose such reasonable restraints as are required for the protection of the public health and public morals. The court says: "While the existence of these two rights, namely, the private right to liberty as to work, and the public right to be protected as to health, safety and morals, is generally admitted, and while there is also no question that there is a line beyond which, as against the other, neither can go, still, as might reasonably have been expected, there is considerable diversity of judicial opinion as to where the line shall be drawn, and sometimes, also, the interpretation and scope of the particular statute may be in dispute. Plumbing work is frequently installed in dark and comparatively inaccessible places. It is obvious that if the work is badly done the public health may be endangered and that the defect, by reason of its location, may not be suspected until after a considerable time. In view of the relation between plumbing work and the public health the legislature may take reasonable precautions for the protection of the public health from the incapacity and ignorance of the worker. Such is the general weight of authorities. Upon examination of this statute we are unable to say that its requirements are unreasonable."



News of Interest Among the Wholesalers and Manufacturers



ANNUAL MEETING OF THE NATIONAL COMMITTEE OF THE CONFEDERATED SUPPLY ASSOCIATIONS.

The National Committee of the Confederated Supply Associations held its annual meeting in New York City on Thursday, November 21st, at which the following officers and directors were unanimously elected:

President, J. J. Ryan, of J. J. Ryan & Co., Chicago, Ill.

Vice-president, W. A. Myler, of Standard San. Mfg. Co., Pittsburgh, Pa.

Treasurer, L. O. Koven, of L. O. Koven & Bro., New York, N. Y.

Secretary, Frank S. Hanley, 261 Broadway, New York, N. Y.

Directors—J. J. Ryan, W. A. Myler, L. O. Koven, and D. L. Hamill, of D. L. Hamill Co., Buffalo, N. Y.; F. W. Hubbard, of W. B. Hubbard & Sons Co., Boston, Mass.; F. D. Keeler, of Rockford Brass Works, Rockford, Ill.

It was announced at the meeting that the following manufacturers have agreed to stencil on their standard and extra heavy weight galvanized range boilers the guaranteed maximum hydraulic working pressure only (85 and 150 lbs. respectively), omitting entirely the test mark: Detroit Range Boiler Co., Detroit, Mich.; Eastern Range Boiler & Welding Co., Conshohocken, Pa.; L. O. Koven & Brother, New York, N. Y.; Riverside Boiler Works, Cambridgeport, Mass.; Ronalds & Johnson Company, New York, N. Y.,; Wm. B. Scaife & Sons Company, Pittsburgh, Pa.; John Trageser Steam Copper Works, New York, N. Y.; L. Wolff Mfg. Company, Chicago, Ill.; John Wood Mfg. Company, Conshohocken, Pa.

It was also ordered that the specifications on extra heavy soil pipe and fittings be made effective July 1, 1913, and that due notification of the action of the committee be given all interested parties.

WILL MANUFACTURE PIPE WRENCHES.

The Universal Wrench Co., of Newark, N. J., has been incorporated with a capital of $500,000, to manufacture pipe wrenches and other tools. The incorporators are: Russell D. Clancy, Ransom Y. Boyce and Alva A. Brown.

WILL MAKE PLUMBING SPECIALTIES.

The Chelsea Manufacturing Co., of Jersey City, N. J., has been incorporated with a capital of $2,000, to manufacture plumbing specialties. The incorporators are: Harvey Edwards, William H. Barnett and Harry T. Letts.

UTICA HEATER CO. ENLARGES ITS PLANT.

The Utica Heater Co., of Utica, N. Y., is just completing a large addition to its plant, which was necessitated by the increased demand for its products. This addition will double the size of the foundry and the shipping room, and it will also give more space to the core room and the warehouse.

PHILIP HAAS CO. BUILDING LARGE ADDITION.

Philip Haas Co., Dayton, O., has started work on a new addition to the present plant, located at Webster and First streets. The building is to be of brick, four stories and basement, which will give the plant an addition of eighteen thousand square feet of floor space, which is to be devoted to the manufacturing of the Haas automatically ventilated water closets.

CAMERON SCHROTH CO. INCORPORATES.

The Cameron Schroth Co., of Rush and Michigan Streets, Chicago, has been incorporated with a capital of $200,000, to deal in boilers, radiators, pipe, heating and plumbing supplies, and vacuum cleaning systems. The new corporation has secured the selling rights in the Chicago territory of the products of the Richmond Radiator Co., successors to the McCrum-Howell Co.

E. STEBBINS MFG. CO. TO BE REORGANIZED.

The E. Stebbins Manufacturing Co., of Springfield, Mass., is to be reorganized and re-financed. The claims of all creditors will be paid and the existing trusteeship dissolved. The capital, which is now $50,000, will be doubled, and the board of directors will be increased from three to five members. The board will consist of Frederick Harris, L. P. Powers, F. L. Chapin, Joseph Shuttuck, jr., and Charles H. Downs. The company makes plumbers' brass goods and its plant is located on Birnie Avenue, in Brightwood, a suburb of Springfield, Mass.

THE ANNUAL BANQUET OF THE METAL WORKERS' CLUB.

The Metal Workers' Club will hold its annual banquet at seven o'clock Wednesday evening, December 11th, at the Hotel Astor, New York City. The banquet committee consists of Theodore Ahrens, of Louisville, Ky., and Wm. M. Webster, of Chicago. The club's board of trustees is composed as follows: A. S. Hills, W. H. Wasweyler, Fred Somerville, D. H. Roberts, C. C. Hale and J. W. Sharp, jr.

THE DECEMBER MEETING OF THE MASSACHUSETTS CHAPTER OF A. S. H. & V. E.

The regular monthly meeting of the Massachusetts Chapter of the American Society of Heating and Ventilating Engineers will be held at the Boston Press Club in

Boston, Mass., on Tuesday evening, December 10th. The meeting opens at 5:30, and dinner will be served at 6 o'clock. The subject of the evening is: "Separation of Heating and Ventilating Contracts from the General and Other Contracts."

RICHMOND RADIATOR COMPANY INCORPORATES TO TAKE OVER McCRUM-HOWELL COMPANY'S INTERESTS.

The Richmond Radiator Co., of New York City, has been incorporated under the laws of the State of Delaware, with a capital of $4,725,000, for the purpose of taking over the property of the McCrum-Howell Co. under the plan of reorganization.

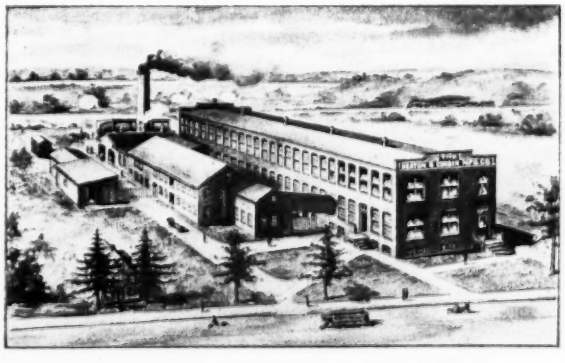
The stock is divided into $1,575,000 7 per cent cumulative preferred and $3,150,000 common. Of the preferred, stockholders participating or underwriters will receive $875,000. Remaining $700,000 will be issued to creditors at 25 per cent of face claims, or used for purposes approved by reorganization committee. Of new $3,150,000 common stock $2,275,000 will be given creditors for 75 per cent of claims, and remaining $875,000 to old stockholders participating in reorganization plan.

The new company will have ample working capital. It is estimated that after certain betterments and improvements, earnings will be $209,000 per year with a gradual increase to $320,000.

F. H. Moore, of Utica, N. Y., will be president of the new company, and the directors will include William W. Potter, vice-president of the Guaranty Trust Co., New York; S. H. Miller, vice-president of the Chase National Bank, New York; Frederick L. Allen, vice-president of the Mechanics' and Metals Bank, New York; F. B. Bartlett and F. H. Moore.

THE UP-TO-DATE PLANT OF THE BEATON & CORBIN MFG. CO. AT SOUTHINGTON, CONN.

The accompanying illustration gives the reader a good idea of the appearance of the Beaton & Corbin Manufacturing Co's. up-to-date plant at Southington, Conn., as it is to-day. This company was incorporated in 1893 under the State laws of Connecticut to manufacture floor and ceiling plates. The first officers were H. H. Corbin, president, and A. J. Beaton, secretary and treasurer. Mr. Beaton, owing to mutual consent shortly severed his connections with the concern, and I. N. Wells was elected to



Beaton & Corbin Mfg. Co's. Up-to-Date Plant.

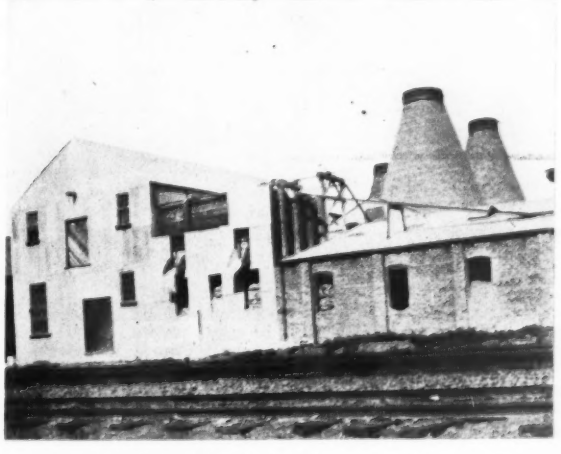
his office, relinquishing the office of secretary, however, to his son, A. R. Wells, during the year 1901. He retained the treasurership until his death in June, 1910, at which time A. R. Wells assumed the added responsibilities of treasurer and general manager. During the year 1911 F. N. Wells, brother of A. R. Wells, was elected president of the company. F. N. Wells had previously been more or less connected in a financial as well as in an executive way, but had other interests which claimed the greater part of his attention and time. Owing to the magnitude the business had acquired at this time it was imperative for him to sever all other connections and devote his entire time and attention to what had grown to be his largest and most valuable interest. It is owing to the unfailing interest and the conscientious efforts of these officers that the Beaton & Corbin Manufacturing Co. has attained its present substantial organization and prosperity.

THE PLANT OF THE PACIFIC PORCELAIN WARE COMPANY.

The accompanying illustrations were reproduced from "snapshots" taken of the Pacific Porcelain Ware Co's.

Pacific Porcelain Ware Co's. Plant.

factory at Richmond, Cal. A few months ago this concern began the manufacture of closet bowls and porcelain tanks and reports business very good in its lines on the Coast.



Another View of Pacific Porcelain Ware Co's. Plant.

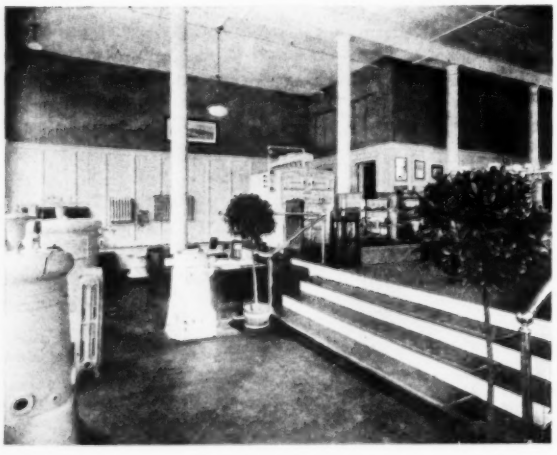
The company is planning to erect a larger plant a few miles outside of Richmond, Cal., in order to take care of the great demand for its products.

NEW BOSTON OFFICES AND SALESROOM OF PIERCE, BUTLER & PIERCE MFG. CO.

The Boston branch of the Pierce, Butler & Pierce Mfg. Co. is now located at the corner of Federal and Franklin streets. This is one of the busiest sections in Boston, and Federal street is a direct cross street to the famous South Station, which handles an enormous amount of passenger traffic. They report marked benefit in their choice of location, and many inquiries as well as increased sales have resulted.

Pierce, Butler & Pierce Mfg. Co's. Boston Office.

This new home, consisting of salesroom, general offices and stockroom, is one of the most attractive and up-to-date stores in the city. All fittings are of absolutely the latest type. The woodwork is finished in white enamel and solid mahogany furniture affords an excellent contrast. Heavy brass rails separating the office from the salesroom and show room and large potted bay trees add to the attractiveness of the room. An indirect system of lighting affords excellent light.



Pierce, Butler & Pierce Mfg. Co's. Showroom in Boston.

All the various types of boilers, radiators and heating specialties sold by this firm are displayed here. These are finished in white enamel and have green trimmings.

The Boston branch takes care of practically all of the New England territory. A large warehouse in Chelsea enables them to give customers prompt and efficient service. Seven salesmen work out of the Boston office, three of them working almost entirely the metropolitan district, and one devoting most of his time to the architects in Boston and vicinity.

Another View of Pierce, Butler & Pierce Mfg. Co's. Showroom in Boston.

ATTRACTIVE CALENDAR OF THE GREAT WESTERN POTTERY CO.

The Great Western Pottery Co. of Kokomo, Ind., and Tiffin, O., have mailed to the trade its December calendar, which is a work of art and will no doubt prove very effective. In addition to the attractive illustration on the front and the calendar for December a full description of one of its closet combinations is given on the back of the card.

PERSONAL MENTION.

Charles P. Math, who has been secretary of the Kokomo Sanitary Manufacturing Co. of Kokomo, Ind., for several years, has resigned his position, taking effect January 1st., to become treasurer of the Miller-Hubbard Manufacturing Co. of Sturgis, Mich.

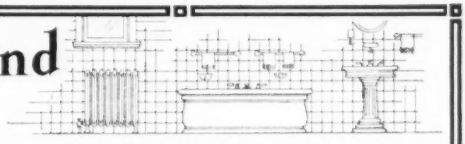
COLUMBUS BRASS CO. OPENS EASTERN OFFICE.

The Columbus Brass Co., Columbus, O., has recently added to its selling force Albert Baerenklau, who will represent the company's interests in New York City and Brooklyn, with headquarters at 276 Hamburg avenue, Brooklyn, N. Y.

ROBERT PARKS PASSES AWAY.

Robert Parks, president of the Robert Parks Plumbing Co., at Omaha, Nebr., died at his home in that city on Saturday, November 23, in his 44th year. He was born in Ireland and came to this country in 1884. He learned his trade in Chicago and went to Omaha in 1889, where he soon after opened a plumbing business on his own account, which proved successful from the beginning. He is survived by his wife and six children.

Among the Plumbing and Heating Contractors



NEWS FROM NEW ENGLAND.

Massachusetts.

Boston.—The trustees of the Amos Stone estate are having new plumbing installed in the buildings at 51 to 59 Lexington street, 1 to 7 Stone street and 2 to 14 Princeton street, Charlestown. The contract, one of the largest to be let in Charlestown for some time, has been awarded to M. W. Collins.

Plymouth.—Hathaway & Sampson have moved their plumbing business from Middle street to new quarters on Main street, where they have a ground floor store and a basement for storage.

Leominster.—After being without plumbing regulations for a little more than five years, this town has now adopted a set of rules and will soon name an inspector of plumbing. There are already a number of candidates in the field for the inspectorship.

Franklin.—Horace W. Hosie has been awarded the contract for plumbing in the new Theron Metcalf school house for $1,825. The heating contract has been given to the Isaac Coffin Co., of Boston, whose bid was $3,900.

Dorchester.—Thos. A. Matthews, Washington Street, has considerable work on hand including the plumbing in four stores and three tenements on Bowdoin Street for Mr. D. Rockwell; plumbing in three tenements for Mr. Rockwell on Windermere Road and plumbing in four stores on River Street, Mattapan, for Wm. Hennessey.

Nichols & Young, 350 Washington Street, have the contract for plumbing in 2 two-family houses for G. T. Davidson in Brookline, Mass., and plumbing in five 3 tenements on Dakota Street for Howard Bros.

John Y. Gillespie, Edward Everett Square, is installing the plumbing and heating in a 6 apartment house for Thos. Mahon on Beacon Street, Brookline, Mass., and plumbing and heating in 3 three-family houses for W. V. Tripp on Washington Street, Dorchester.

Quincy.—W. A. Bradford Co. have the following contracts for plumbing and heating: Residence for W. A. White at Russell Park; residence for Fire Chief Litchfield, at 58 Quincy Street; a four-apartment block for Mrs. Richards on Gluer Avenue; residence for Mr. Williams at Milton, Mass.; residence for Mr. E. H. Sears at Wollaston, Mass.

East Boston.—Edward Martineau, 53 Maverick Square, is quite busy at this time and has contracts for plumbing as follows: Two-family house on Burrough Street for B. A. Dolan; in a large residence for T. B. Monroe on Commonwealth Avenue; 2 two-family houses for T. B. Monroe on Chestnut Hill Avenue, Brookline.

Chas. King & Co., Merriden Street, has the contract to install the plumbing in twenty-two two-family houses at Orient Heights, for J. Goldinger.

Beverly Farms.—Jos. E. Stanwood has the contract for plumbing in the new high school at Beverly Farms.

Somerville.—E. & H. J. Connell, 149 Pearl Street, have the plumbing contract in the new Evangelist church on Winter Hill and lots of jobbing work which is usual for them at this time of the year.

Boston.—Orrin C. Poole, Union Park Street, West, is doing the plumbing in a large residence for Mr. Beardsley in Brookline, Mass., also plumbing in residence at Woods Hole, Mass., for Mr. Jas. Fay.

P. W. Donaghue, for some time connected with The John O'Connell Co., on Oliver Street, has opened a shop and office at 149 Pearl Street. He reports that he is starting off very well and has just secured the contract for plumbing in a large new garage in the Back Bay.

Lynn.—Thompson & Libby, Buffoon Street, have contracts for plumbing in 3 apartment houses in Lynn. They have also ten heating jobs to be completed as soon as possible.

John Gard, who for many years was connected with his brother, Thos. Gard, has opened a plumbing and sheet metal business in Lynn, on Ocean Avenue. Mr. Gard states that for a beginning he is doing very well.

Connecticut.

Windsor.—An appropriation of $1,200 has been made for installing a heating system and new toilet arrangements in the town hall building. The contracts have not yet been let.

South Norwalk.—Hoyt & Jessup are doing the plumbing and Frederick J. Wolfel is installing the water system in the new house of Philip G. Gossier.

Meriden.—John J. Cashen and David T. Keegan, who have conducted a plumbing establishment at 102 West Main street, have dissolved partnership by mutual consent. The business will be continued by Mr. Cashen and his son.

Bridgeport.—A. E. Roberts is doing the plumbing and heating in a house on Deacon street for Sallie M. Rich; plumbing and heating in six new houses on Davenport street for W. F. Chatlos, and plumbing and heating in a house on Stratford avenue for the same party. Work is well along on a six family house, which is being erected by F. George Nording. Hallett & Bennett have the contract for plumbing and tin work. John Birmingham has the contract for plumbing in a three family house being erected on Smith street for Suzanna Balog. Work has been started on a three family house on Grand street, and the contract for plumbing has been let to John J. Scanlon. Henry Cope is doing the plumbing and heating in a house on Main street for James Stone, and plumbing a house on Wayne street for E. D. Hayes. The W. P. Kirk Co. will do the plumbing, heating and metal work on the new building on State street for Leopold Weiss. It is to be used for manufacturing purposes.

Waterbury.—M. J. Daly & Sons, Inc., has been awarded the contract for the heating in the factory of the Ridlon Tool & Machine Co., in Naugatuck.

New Hampshire.

Concord.—The Boston & Maine Railroad has commenced the installation of a central heating plant which will be used for the heating of the passenger and freight stations, the roundhouse, yard offices and other buildings in the vicinity as well as keep passenger cars on the sid-

ings warmed when not in use. The plant is expected to be ready for use before the winter is far advanced.

NEWS FROM PHILADELPHIA AND VICINITY.

According to the law now in force, it becomes necessary for every plumber, both master and journeyman in the city of Philadelphia to re-register at the House Drainage Division Bureau of Health, 613 City Hall during the month of December.

Any man now engaged in the business or working at the trade who fails to re-register during the month of December will be required to undergo the regular examination, the same as if he had never been registered. The legal charge for re-registration is one dollar for master plumbers and twenty-five cents for journeymen plumbers.

The plumbing trade of Philadelphia is starting to realize the tremendous advantage of the trade schools of which there are several in this city. The school at 17th and Pine Streets is giving instructions in plumbing, its principal being Mr. John Bross, who is also assistant to the Chief of the Bureau of House Drainage of Philadelphia. Mr. Bross has accomplished wonders and the young men now undergoing practical and theoretical instructions should turn out to be very superior mechanics.

Walter H. Nash, 617 S. 17th Street, has been awarded the plumbing in the new residence at 21st and Locust Streets for Mr. Bullock. This house will contain three new complete bath rooms. Cost, $800. Mr. Nash is also introducing plumbing in five houses on Dickinson Street for Mr. Finberg.

Schoellhamer & Reuter, 1314 Ridge Avenue, have been awarded the plumbing and heating in the office building at the corner of Broad and Arch Streets, which is undergoing extensive alterations.

T. T. Rockett, 629 No. 19th Street, has been awarded the plumbing and heating in the West Park garage, at the corner of 39th and Lancaster Avenue, and has also the plumbing on the sub-post office station on N. 19th Street.

F. Sabin & Co., 237 Broad street, have been awarded the plumbing and heating in the residence of James Farrell, 324 N. 62nd street.

Geo. Kelly, 23rd and Pine street, is installing plumbing and heating in the residence of B. Henry, 407 S. 24th street.

H. Manning, 825 Spring Garden street, has been awarded the plumbing and heating in the large farm residence and stable in Bycote, Pa., for Mr. H. Lukens.

J. P. Fitzgerald has removed his shop from 120 S. 6th street to 133 S. 10th street, where he has established larger quarters. Mr. Fitzgerald has just completed some extensive alterations in the plumbing system at the Jefferson hospital.

J. Sellers Pennock, 33 N. Seventh street, has been awarded the plumbing contract on the thirteen houses which have been converted into apartments on Diamond street between 17th and 18th street. This is one of the largest contracts awarded in this line and plans are on hand now to take in the whole row. This is being done for the Diamond Realty Co.

Ernest F. Simpson, West Collingswood, N. J., has been awarded the plumbing in the new residence which is being erected for Mr. Max P. Miller, of Collingswood. Mr. Simpson has also been awarded the plumbing and heating in the two new houses which are being built for R. F. Adams, of Collingswood.

PHILADELPHIA ASSOCIATION NEWS.

Mr. Ed. F. Roberts, president of the Philadelphia Association, had a very serious accident on November 26th, when in a dark hallway he came in contact with a piece of furniture. His eye glasses were broken, a piece of glass penetrated his eye, cutting away considerable of the iris. Skillful occulists are doing their best to save the eye.

The Philadelphia Association advises its members to use regular printed and numbered order blanks when sending for goods at supply houses, as this will prevent much trouble, losses and disputes between customer and jobber, also enabling the master plumber to trace properly all materials purchased.

At the November meeting of the Association the following members were appointed as general committee in the preparation for and conducting of the National convention of Master Plumbers to be held in Philadelphia, 1913. Geo. F. Uber, chairman; Harry L. Righter, Samuel W. Barnes, Harry B. Lentz, S. Louis Barnes, Jacob Bugger, Wm. H. Doyle, D. F. Durkin, jr., Gregor Drummond, George Moeller, Robert J. Hoben, Richard H. Watson and William Boal.

It is the desire of the Association to leave no stone unturned to make the 1913 National convention one to be long remembered.

Some of the extremely good features of the Philadelphia Association are the labor bureau and the credit bureau. The labor bureau is conducted in a very thorough manner by D. F. Durkin at 1613 Pine Street. Members requiring help simply call up the bureau and are furnished such men as are then out of employment and are on the bureau's files. The bureau is a tremendous help as the records of the journeymen on file are kept in a very thorough manner and as the man passes from employer to employer additional reports are asked for. This will naturally cut out the crook and the drunkard, very much to the benefit of the local trade.

The credit bureau conducted by R. H. Pflug-Felder, Eighth, corner Norris Street, has now reports on file covering over 100,000 individuals. The reports are as complete as that of any private mercantile agency and any member of the Philadelphia Association can get full information over the telephone without cost.

The Association is doing all in its power to save losses to its members and while the membership of the Association is estimated to be about 75 per cent of the purchasing power of the plumbing trade in the city where there are still many men engaged in the business who are not members of the Association. The Association is now accomplishing wonders but could do still more, if every men engaged in the business would realize the necessity of being a member.

NEWS FROM CLEVELAND, OHIO.

The Chappell-Warren Co., 1384 E. Sixth Street, has the heating contract for the Euclid Fifty-fifth building, amounting to $10,000. The plumbing has been let to The Koblitz Plumbing Co., 1305 Prospect Avenue, amounting to $5,000.

R. E. Greene & Son, 4526 Detroit Avenue, have the plumbing and heating contract in German Wallace College, Berea, O., amounting to $7,500. Also the plumbing in the Cleveland Foundry Co., amounting to $5,500 and the plumbing in the residence of Ralph Popp on Shaker Heights.

Price & Welker, 1532 Columbus Rd., will be in their new location at 328 Champlain Avenue, December 1. This

is the first move they have made since they started in business eighteen years ago.

The Kennedy Co., 1900 Euclid Avenue, is adding four stores to its office building, which will be completed by April, 1913.

The plumbing in the new residence of L. F. Grant, 1674 E. 71st Street, has been let to The Cleveland Sanitation Co., 6519 Euclid Avenue. The heating contract has been awarded to P. R. Crawford & Son, 331 Williamson Bldg.

G. S. Papworth & Son, 6024 Euclid Avenue, have the plumbing contract for the residence of Horatio Ford, on Mayfield Rd. The heating is being done by Becker-Seidel Co., 315-317 Champlain Street.

The Becker-Seidel Co. has the heating contract for the new school building on Shaker Heights. The plumbing contract has been given to The Koblitz Plumbing Co., 1305 Prospect Avenue.

The American Heating & Ventilating Co., 1285 W. 2nd Street, is going out of business. Percy Cushman has been employed by the creditors to finish up their contracts on hand.

A PAIR OF SOUTHERN BEAUTIES.

On a nice sunshiny day recently in New Orleans there happened to meet C. J. Watson, with Landers, Frary & Clark, and R. D. Pierce, who does the "Knight of the Grip" stunt with M. Glauber & Co., of New York. These

"A Pair of Southern Beauties."

two estimable gentlemen were unable to resist the temptation to pose before the camera, Mr. Watson even taking off his hat to it. New Orleans seemed to agree with both of them.

NEWS FROM MICHIGAN.

The Master Plumbers' Association, of Kalamazoo, Mich., is said to be one of the livest in the smaller cities. It has a large and pleasant hall, decorated with framed photographs of deceased and past master plumbers of the association, wherein are held weekly meetings. A large attendance is the general rule at these meetings for a substantial fine imposed on the members for non-attendance has the desired effect. A full attendance of members at meetings is the keynote of a good organization. Of the seventeen shops in Kalamazoo fourteen of them are members of the Association.

NEWS FROM CINCINNATI, OHIO.

The Werk Soap Co., which is building a new factory in the Milcreek Valley district as per plan and under the supervision of the Houchin-Aiken Co. of New York, has awarded the contract for plumbing to Henry Niemes, 4112 Hamilton Avenue. This is quite a large contract and has been under consideration for a long time. The building is already under roof and Mr. Niemes has started to work on his contract. Mr. Niemes has also been awarded contract for plumbing a parsonage of the First German Evangelical Church, to be built on the south side of Hoffner Street, as designed by Martin Fisher, architect.

F. C. Siefert & Co., located on Hamilton and Chase Avenue, Northside, are plumbing a house for Dickman & Ortman on the east side of Inez Avenue, College Hill, and are also installing the plumbing in an apartment building for Mr. A. M. Kneeve, Glenmore and St. Martin's avenues, Price Hill.

William A. Botley, 3546 Eastern Avenue, was the successful bidder on the plumbing for a building being erected on Hickory and Harvey Avenues, by Newcomb & Jenkins, for Mrs. Gordesman.

Messrs. Kleine & Bernard, of Clifton, O., were awarded contract for plumbing residence for T. J. Chapman, Carthage Avenue, Clifton, as per plans by Hall & Burroughs.

Frank Tweedie, who formerly was connected with Richard Cluxton under the firm name of Tweedie & Cluxton, and later acted as superintendent of construction for the Attlesey-Dyer Co. and the William Hellenbrand Co., has accepted a position with C. C. Hartwell Co., Ltd., of New Orleans, to take full charge of their plumbing department. The Hartwell people became acquainted with Mr. Tweedie's work while he was in charge of several buildings in New Orleans for the Attlesey-Dyer Co.

Fred Smith, of Norwood, O., is installing the plumbing in a residence being erected on Winslow Avenue for Edward Jacob.

Ray and Harry Hillenbrand, of the William Hillenbrand Co., returned from a hunting trip in Indiana. They remarked that game was scarcer in that part of the country, than plumbing contracts were in Cincinnati, so they returned to get back on the job.

Norwood, O., is soon to have another theater, to be built on the site of the old Sanker Garden property, located on the main thoroughfare. The theater is to cost $40,000, and is to have a seating capacity of 1,500.

Tilden R. French is having his architects draw plans for a $30,000 flat building to be erected on Vine Street, opposite the old power-house in Corryville. The building is to be of brick and stone and is to be an up-to-date apartment building.

Mr. and Mrs. C. J. Dryer have taken over the old M. B. Farrin residence on Reading Road, opposite South Crescent Avenue, Avondale. They will remodel the residence and will add thereto a three-story building at a cost of about $10,000 to be used for private hotel purposes.

NEWS FROM LOUISVILLE, KY.

The week, bringing a continuance of cold, snappy Thanksgiving weather of the most seasonable variety, has provided plenty of business for the plumbers and steam-fitters of the Bluegrass. Local builders can see "Old Boreas" plainly approaching, and they do not propose to be caught unawares with interior work uncompleted. The plumbers' services for installation work are at a premium, accordingly.

Repair work is by no means an unimportant factor. In addition to this there is a lot of steam and gas fitting work to be procured and the furnace men are working overtime. In fact, "odd jobs" are assuming such an important position, demanding so much time and labor, that not a few of the domestic engineers in the outlying districts are preparing to close down on new installation during the next few months, devoting themselves exclusively to emergency repairs which are of a very profitable nature.

A point of extreme interest to Louisville plumbers is that the Board of Public Works is about to proceed with the letting of the first batch of $90,000 worth of contracts for new sewer construction in this city. The work which the Board authorizes in drainage improvements offers a ground plan for new plumbing, for wherever new sewers are run there is sure to be new plumbing work in property in the district affected, while building invariably booms after an improvement of this sort.

The Louisville Master Plumbers' Association met in joyous session at its rooms on the southwest corner of Fourth Avenue and Green Street last Monday night. The occasion was essentially in the nature of a festival, for plenty of refreshments were provided and anything but the most rousing business talk was taboo. Forty-one enthusiastic master plumbers gathered, and the jobbing houses in Louisville were represented. Several speakers of ability helped to spread the good cheer of the evening. Phil Laib, of the Laib Company, and Theodore Ahrens, president of the Standard Sanitary Manufacturing Company, had something to say that was worth listening to.

C. L. Riddle, jr., for years a master plumber in Louisville, is now connected with the Attlesby-Dyer Co., of Cincinnati, O. Mr. Riddle closed his shop at 914 Baxter avenue some time ago. He recently returned from Cincinnati, where he was engaged in the Attlesby-Dyer interests upon the big plumbing job in the 34-story Union Central building, which is being erected in the Queen City. The Attlesby-Dyer Co. has secured the contract for the plumbing and steam-fitting upon the Starks building at Fourth avenue and Walnut street in this city, a 15-story structure which will possess the greatest aggregate of floor space in Louisville.

A. J. Anderson, president of A. J. Anderson & Co., has closed several contracts for heating, ventilating and power equipment during the past couple of weeks. A $35,000 contract for installing heating and ventilating equipment in the new $300,000 home of the Young Men's Christian Association, has been awarded to the Anderson interests. The company has also closed for furnishing the power service installation upon the new box factory at the Mangel Box Co. at Winston-Salem, N. C., and for similar work on the 400-horse power plant of the Cannelton Public Service Co., of Cannelton, Ind.

That the football field hath its victories no less renowned than those of plumbing or steam-fitting was demonstrated conclusively in this city on Thanksgiving Day, when William M. Duffy, son of M. J. Duffy, president of the plumbing firm of M. J. Duffy & Sons, coached a crack football team of the Louisville Male High School to a decisive victory over their established opponents, the representatives of the Manual Training High School. The complete knowledge of young Duffy, who is one of the finest athletes ever turned out in Kentucky, enabled High to triumph to the tune of 28 to 7.

A contract for installing steam heating equipment in the City Hall Annex at Sixth and Jefferson streets in Louisville has been awarded F. S. Schardein & Sons. Besides this bit of new work, the Schardein force is kept working overtime upon routine jobs.

The finishing touches upon a job of bungalow plumbing, including the installation and sewer connections for half a dozen fixtures in the bathroom and laundry are being completed by W. F. Schaetzly, of 1900 South Fourth avenue, in the residence of John McDaniel in Southern Heights. Mr. Schaetzly proposes to devote himself exclusively to repair work in South Louisville during the next few months of cold weather.

The plumbing installation and sewer connections in the Church of Our Merciful Savior at Eleventh and Walnut streets, a colored institution, are being handled by Edwin R. Sauer, 3004 Bardstown Road. Mr. Sauer has all the work he can take care of comfortably, having been emerged for some time upon several handsome residences in Pewee Valley, Ky., which are owned by M. S. Rice.

J. H. Rittman, of 1452 South Brook street, has contracted to install the plumbing in the residence of Coleman B. Long, at Thirty-third street and Broadway.

L. J. Rosenfield, 8th and W. Jefferson street, recently returned from a short pleasure trip to Leavenworth, Ind.

The firm of Roser & Hegan has dissolved, each of its members having decided to embark in business individually. George Roser has offices in the United Laundry building at Third and Walnut streets, while Robert Hegan is established on Main street near Fourth avenue.

NEWS FROM ROCHESTER, N. Y.

Saunders & Nolan, 297 East avenue, have secured the following plumbing contracts: Residence of Dr. T. Parsons, 964 East avenue, $3,000; S. S. Solomon's home, East avenue and Council Rock, $2,000; John Kitchen's apartment house, corner Main and Alexander, $1,000, Iola Sanitarium at Henrietta, N. Y., $1,000, and the city's new fire engine house, Stone street, $900.

Jos. B. Gleason is now located in his new quarters at 249 Monroe avenue. His former location was at 186 Monroe.

The firm of Hodgson, Knapp, Oveatt Co., Inc., 657 Monroe avenue, has business stacked up to last until April, 1913. The company has just landed a large contract for the plumbing work in twenty-two new houses.

Chas. Becker, 110 Joseph avenue, has adopted the use of a Chase motor truck. Mr. Becker takes more business pleasure out of his machine than half a dozen horse-driven vehicles.

Three deeds were recorded yesterday, showing transfers of property to the Eastman Kodak Co., in the town of Greece. The total expenditure amounted to $100,000. The tract of land which was purchased covered sixty acres and siding on two railroads. It is the plan of the

Eastman Co. to duplicate its plant at Rochester. Plans will be figured at once for the completion of the new plant.

The opening of a new moving theater, which will accommodate one thousand persons, is being constructed at Lyndhurst and North streets. Hutchinson & Cutler, architects, have included a large electric ventilating system by which the air can be changed in five minutes. Water fountains and rest rooms for the women and children will be one of the features.

Building permits for Rochester this month have amounted to over $3,000,000. Most of this will be turned into the building of residences.

H. C. Fletcher, of the Shop School, will teach pupils a course in sanitation and instruct them in the importance of plumbing in the homes. A complete course in the city ordinances relative to health laws and proper sanitation in the homes will be carefully dwelt upon by competent instructors. The students will be taught the necessity of healthy surroundings relative to our present system of sanitation. Copies of the health ordinances will be distributed among the pupils and addresses will be delivered by the city plumbing inspector.

A MODERN PLUMBING ESTABLISHMENT.

The accompanying illustration shows an interior view of the up-to-date office and show room of A. C. Kramichfield, 434 Genesee Street, Buffalo, N. Y. Mr. Kramichfield

A Modern Plumbing Establishment.

reports an unusually busy season and has on his books at the present time the following contracts: Plumbing in the Curtis building, Franklin and Huron Streets; in the German Deaconess Old Home, and in the Pilgrim church.

NEWS FROM NIAGARA FALLS, N. Y.

Joseph G. Riley, 417 Erie Street, has begun the plumbing work on the flat building of E. S. Ramsdell on Chilton Avenue. He also has secured the plumbing contract on the new paper mills being built at Thorold, Ontario, Canada. Several new mills are being constructed in addition to those already in operation.

McGrath & Durk, 1601 Fifteenth Street, were the successful bidders on the plumbing in St. Mary's hospital which is now being built on the corner of Sixth and Ferry Streets.

CHICAGO NEWS OF INTEREST.

At the regular meeting of the county board held recently, Commissioner George Sultan moved that all the bids for plumbing in the new county hospital be thrown out. He said that they were enormously high and that the lowest bid was $60,000 higher than it ought to be. This motion was carried, without dissent. This action closed a long controversy in the outgoing board over the specifications for plumbing submitted by Architect Paul G. Gerhardt.

Letters have been sent to the mayors and boards of health in cities of over 10,000 population by Thomas J. Claffy, president of the American Society of Inspectors of Plumbing and Sanitary Engineers, urging these municipalities to send a delegate or two to the next convention of the society to be held in Louisville, Kentucky, May 14 and 16, 1913. The subject matter of these letters read in part:

"Municipal sanitation, plumbing, drainage, water supply, ventilation, waste disposal, etc., are subjects requiring continual study by municipal officers and employes owing to the constantly changing conditions and developments. These subjects will be discussed at our next convention.

"It is to be hoped that your city will continue its good record by including in your annual appropriation and expense account that will enable your plumbing inspector, sanitary engineer, or health officer to attend our next annual convention at Louisville, May 14 and 16, 1913.

"We respectfully urge upon you the necessity of representation at this convention. Very respectfully yours,

(Signed) "Thomas J. Claffy."

A list of cities which have paid the expenses of sending delegates to the conventions of the society in the past runs as follows:

Was Paid By	Number of Delegates.	Years Attended
Pasadena	1	1906-12
Pittsburgh	3	1906-12
Richmond	1	1910-11-12
Rochester	1	1906-12
Buffalo	2	1908-12
Fresno, Cal.	1	1908-12
Baltimore	1	1908-12
Norfolk, Va.	1	1912
Waterbury, Conn.	1	1910-11-12
Providence, R. I.	1	1912
Peoria	1	1906-12
St. Joseph, Mo.	1	1908-12
Waterloo, Ia.	1	1906-12
Elmira, N. Y.	1	1911-12
Louisville	1	1912
Wilmington, Del.	1	1906-12
Detroit	1	1908-12
Green Bay, Wis.	1	1910-11
Muscatine, Ia.	1	1912
San Francisco	1	1908-12
Milwaukee	1	1908-12
Poughkeepsie, N. Y.	1	1911-12
Dayton	1	1911-12
Dallas, Tex.	1	1912
Sioux Falls	1	1912
Chicago	3	1909-10

Watertown, S. D.—F. L. Smith has sold his plumbing and heating business to Andrew Smedley and Clarence Heaton.

Littleton, N. H.—Adolph Cyr, a plumber of this city, has taken unto himself a bride in the person of Miss Helen Meaney. A brother of the groom, John Cyr, came all the way from Alaska to act as best man.

NEWS FROM MINNEAPOLIS, MINN.

O. F. Kohl, 808 First Avenue, South, is installing in the Y. M. C. A. building connections to the swimming tank, including filters and tank heating with automatic control.

J. P. Sweigert, 1806 Washington Street, North, was the successful bidder on the plumbing in the new Glenwood Englewood building.

Ahern & Mullane, 418 W. Lake Street, has the contract for the plumbing in the new residence for Mr. Charles Van Nest.

Belden, Porter, Gray Co., 704 Fifth Street, South, are overhauling the heating in the St. Mary's hospital in this city.

The Hughes Heating & Plumbing Co., 1514 E. Franklin Avenue, have a large amount of work on hand. Some of their large contracts are the plumbing in the Millard hall at the University of Minnesota, heating in the Old Folks' Home, and the plumbing and heating in the new flat building at 1414 Laurel Avenue.

H. Kelly & Co., Third Street and Tenth Avenue, South, are doing considerable work in Canada, and a branch office is being considered in that location.

William Meurer, 1515 Hennepin Avenue, has the contract for the installation of the plumbing and heating in the new flat building at Forty-third Street and Upton Avenue, South.

Ireland-Simons Co., 518 Second Street, South, were awarded the contract for the plumbing and heating in the Melin flats at 2520 Fourth Avenue, South.

J. N. Smith & Co., 613 First Avenue, South, is installing the plumbing and heating in the new residence at 2806 Lake of The Isle Boulevard.

NEWS FROM ST. PAUL, MINN.

Next year promises to be a record-breaker in St. Paul in the building line if all the buildings that are being planned materialize. The Merchants' National and the National German-American banks have merged under one head and will be known as the Merchants' National Bank. They will build a sixteen-story bank and office building on the old site of the National German-American Bank building at Fourth and Robert streets.

Adolph and Otto Brewer, of the Jacob Schmidt Brewing Co., have purchased the property on the southwest corner of Seventh and Robert streets, where a new fifteen story office building will be put up.

Gordon & Ferguson will soon start work tearing down the old Finch building at Fourth and Sibley streets to make room for a nine-story office and factory building.

Among the other large buildings to be started is a new home for the Minnesota Club, House of Hope Church, the new Library Building and a new Union Depot.

J. E. Dolan let the plumbing contract for his new residence at Prior and Grand avenues to Edward Snyker, 1661 Grand avenue. Mr. Snyker was also the successful bidder on the plumbing and gas-fitting in a new residence for Edward Heddy at Marshall avenue and Finn street.

Geo. McConnon, 516 St. Peter street, was awarded the steam heating contract in a four-flat building at 102 South Western avenue for the Sperry Realty Co.

Doyle Bros., West Seventh and Walnut streets, are installing ten new bathrooms in the Piedmont Flats at West Ninth street and Smith avenue.

The Capital Plumbing & Heating Co., 135 North Smith avenue, were low bidders on the hot water heating and plumbing in a new residence for A. Gunthrie, at 1669 West University avenue.

J. J. Bailey, Jackson street, is installing new plumbing fixtures in a remodeled residence for S. A. Stees, at 155 North Virginia avenue.

J. D. Hyland, 198 West Third street, is installing the plumbing and hot water heating in a residence at Hague and Lexington avenues for D. W. Taylor; a hot water heating plant in J. E. Donlan's residence on Grand avenue and was awarded the plumbing in C. A. Roach's new dwelling house on Summit avenue, near Saratoga street. He is also installing a hot water plant for Mrs. J. McMillan at 282 Eagle street.

J. E. Holt, 287 East Sixth street, is putting in the fan system in the new University Club at Summit avenue and Ramsey street.

Frank Sauter was awarded the hot water heating in a saloon and flat building for the Theo. Hamm Brewing Co. at East Seventh and Minnehaha streets.

All plumbing and heating bids were rejected on the Goodhue county court house at Red Wing, because they were higher than the estimates submitted by A. H. Gauger, architect, Scandinavian Bank Building.

George McGeary, 177 West Third street, is doing the hot water heating work in a new residence for E. L. Buxton on Summit avenue, and also the steam heating and boiler work in a new factory for Wright, Barrett & Stilwell, at Midway.

Nels Nelson, 1457 Hewitt avenue, is installing four boilers, piping and 1,600 feet of radiation for hot water heating in a four-flat building for Ole Swenson, at Case and Arkwright streets.

The late arrival of cold weather has made this fall an exceptionally good one from the steamfitters' point of view, as very few heating plants have been put into operation as yet, and this has given the fitters plenty of time to get all of their work finished up before "firing up time" arrives and has given all the branches of the building trades a chance to get the outside work done and buildings closed in so that the winter jobs can be completed without much outdoor work. The recent drop in temperature, however, will put several of the local plumbers to work again with the "thawing steamer," as the first cold snap usually finds lots of water pipes unprotected from the frost. A "plumbers' bill" is a good warning for the house owner to cover up and protect his water pipes.

Bert O'Neil, 899 Fuller street, has closed up several heating contracts in the last few days, to be installed this winter. Among some of the largest are hot water plants in new residences for Julius Heilbron of the Blau Gas Co. and Dr. Victor O'Connor.

Nels Nelson, 1467 Hewitt avenue, was awarded the hot water heating in a new residence for H. Essenholm at 2134 Rondo street, and for John Linquist, at 958 Osceola avenue.

Geo. McGeary, 163 West Third street, is installing a hot water heating plant for L. J. Favlicek at the corner of Grand and Oakland avenues.

Lundstrom & Blomquist, 923 Selby avenue, have just completed the plumbing in a new residence for Wm. Marquard.

The Geo. A. Kees Domestic Engineering Co., 263 East Seventh street, have started work on the plumbing and gas fitting in the new plant for the St. Paul Bread Co. on Twelth and Robert streets.

Doyle Bros., 263 West Seventh street, were the successful bidders on a hot water heating plant for Mrs. H. Henton, at 362 West Seventh street.

W. F. Weyh, 895 East Lawson street, is installing a

hot water heating plant in Wm. Gerber's new residence on Portland avenue.

F. J. Stehl, 506 St. Peter street, was awarded the plumbing contract in a new residence for J. McCarthy, at 1063 Goodrich avenue, and he is also putting in two new bathrooms in a duplex flat at 333 East Robie street.

Frank Sauter, 346 Hope street, is putting in a hot water heating plant for Geo. Pabst, at East Sixth and Hope streets.

The O'Neil Plumbing & Heating Co., 83 East Eighth street, was awarded the hot water heating in a residence for J. Hoffman, on Sherburne avenue.

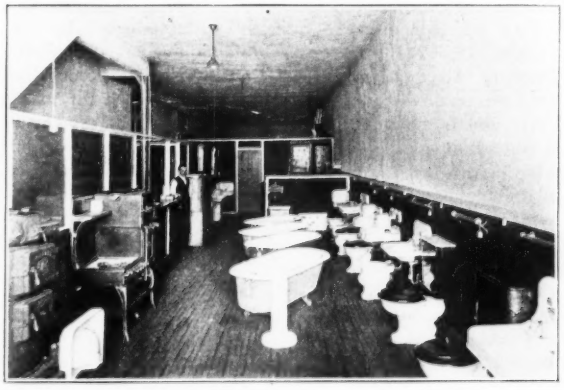
The Crocus Hill Plumbing & Heating Co., 744 Grand avenue, was awarded the plumbing and gas fitting in Emil Carlson's new residence, at 1627 Edmund street.

Mark Fitzpatrick, architect, is temporarily located at 449 St. Peter street, having torn down his old building on West Ninth street to make room for a nine-story apartment building. Plans and specifications are out for figures on the plumbing and heating. Mr. Fitzpatrick will be located in the new building as soon as it is completed.

The Griffin Wheel Works, at Phalen and Stillwater avenues, are putting in their own sewer, waterworks and plumbing system throughout their entire factory. Ed. Richter, 180 North Snelling avenue, is doing the sewer work. The contract for the water works system was awarded to O'Neil & Preston, 60 East Sixth street. Bids are being taken on the plumbing.

AN UP-TO-DATE PLUMBING AND HEATING SHOWROOM.

A plumbing and heating showroom of unusual attractiveness is shown herewith. This admirable display can



Up-to-Date Plumbing and Heating Showroom.

be seen in the home of the business of J. H. Fenton & Co. at Cedar Rapids, Ia. It can readily be seen that all the fixtures in this showroom are displayed to good advantage.

A Chicago heating contractor had received a second complaint from an irate customer that the new hot water heating plant wasn't warming things up as it should, so he dispatched Dennis with a thermometer to take readings from the various radiators.

"Well," said he, when Dennis returned, "what temperature did you get?"

"Oi got a hell of a roastin'," said Dennis.

Don't feel sorry for yourself—feel sorry for the folks who have to live with you.—Elbert Hubbard.

NEWS FROM THE PACIFIC COAST.

San Francisco.

In the past week there has been a noticeable slacking up of business in the plumbing jobbing trade, but this is to be expected at this time, and business is likely to continue rather dull until after the holidays. The fall season, as a whole, however, has held up remarkably well and the volume of sales are much ahead of the same period last year, notwithstanding the higher prices. Local jobbers are beginning, in several instances, to take inventory and hence they have been inclined to curtail orders to the manufacturers recently on all goods the supply of which has been steadily available. Stocks here in most lines are ample for the trade, and, in view of the uncertainty prevailing relative to railroad tariffs, it is not likely that much further effort will be made by coast jobbers to rush in goods before the freight rates are readjusted. The present schedule will continue to the first of the year at least. Special Examiner Markley of the Interstate Commerce Commission is expected to arrive here early in December, and the plumbing dealers will meet him and present arguments for the readjustment of freight schedules, both for the transcontinental hauls and the hauls to intermediate points. The traffic bureau of the San Francisco Chamber of Commerce has invited all the plumbing jobbers of San Francisco, Los Angeles, Portland, Seattle and other coast cities to be present at the meeting, or provide for adequate representation.

The most important building announcement of the past week in San Francisco is that of the new million dollar railway station of the Southern Pacific, which will be erected on the site of the old station at Third and Townsend streets. The plan of having the new station located near the Ferry building has been abandoned on account of impracticability and the danger of causing a too great congestion of traffic. The new depot will be built in the mission style of architecture and will be completed before 1915.

The Board of Public Works has awarded the contract for the heating and ventilating work on the new Starr King School, on Utah street, to the John G. Sutton Co.; amount, $2,380. The plumbing contract on the same building went to the Turner Co.; amount, $4,870.

Among the contracts just let on the new Insurance Exchange Building, at California and Leidesdorff streets, are the following: Heating contract to J. E. O'Mara, amount $9,327; well and pump contract to Roy W. Simonds, amount $1,925; plumbing contract to the Turner Co., amount $21,500; and the contract for a water cooling system to the Vulcan Iron Works, amount $1,460.

Cheroske Bros., owners of the City Plumbing & Mechanical works at Long Beach, Cal., 427 Pine avenue, have announced plans for erecting a new building for their business on Fourth street, between Locust and American avenues.

D. S. Horrall and Thomas Hatler, of Phoenix, Ariz., have formed a partnership and will engage in the plumbing business at Phoenix under the firm name of the Horrall & Hatler Plumbing Co. The new concern has temporary quarters at the old stand of the Five Points Sheet Metal Works, at Sixth avenue and Monroe streets.

The Standard Plumbing & Heating Co., with a capital stock of $5,000, has been incorporated at Spokane, Wash., by G. Cricher, H. W. English and J. Milne.

F. J. McFarland, who has been in the employ of the

Waitsburg Plumbing Co., at Waitsburg, Wash., has leased the shop from Jacob Schmitt, the proprietor, and taken over the management on his own account.

Bids are being received at the auditor's office in Portland, for the construction of a public comfort station at Sixth and Yamhill streets. This is the first improvement of the kind to be started in Portland, but other stations are to follow.

The city council of Spokane, Wash., has authorized the letting of additional contracts for plumbing work on the new city hall.

CONTRACTS AWARDED

Moline, Ill.—Henry G. Schmidt has been awarded the contract for the installation of plumbing systems in the John Deere and Lincoln school buildings. These contracts amount to $2,990.

Bloomington, Ill.—G. J. Jones has secured the contract for the installation of plumbing and heating systems in the new Presbyterian church in Green Valley.

Fairmont, Minn.—F. W. Shutt has been awarded the contract for the installation of an up-to-date heating plant in Porter Bros. & Bassett's garage. Consideration, $1,070.

Kansas City, Mo.—E. D. Hornbrook, of 1116-1118 Oak street, has been awarded the contract for the installation of heating and ventilating systems in the new Union Station in this city. The consideration amounts to nearly $300,000.

Trenton, N. J.—Charles B. Whitehead has secured the contract for the installation of plumbing and heating systems in Clarence Christian's new store and dwelling at East State street and Olden avenue. Consideration, $1,720.

Hibbing, Minn.—A. C. Schirmer & Co. have been awarded the contract for the plumbing in the new Buhl school. This firm has also secured the contract for the plumbing in the new O'Rourke block now being built here.

Waterford, N. Y.—Chas. H. Carter has secured the contract for the installation of plumbing and steam-heating systems in the new bleachery at the Wayside Mill in Troy, N. Y.

Saugerties, N. Y.—Daniel Lamb & Son have been awarded the contract for the plumbing and heating in the addition to the Central House.

Marshall, Ill.—James M. Hooper has secured the contract for the installation of a heating plant in the sheriff's new residence. Consideration, $875.

IRVING LORENZO GAULT IS DEAD.

Irving Lorenzo Gault, who conducted a plumbing business at Fond du Lac, Wis., from 1900 to 1911, died last week at his home in that city. Mr. Gault was born in Ohio in 1850 but moved to Wisconsin with his parents when he was only four years old. He was engaged in the farm implement business for many years and was later a successful master plumber. He sold his plumbing business about a year ago on account of poor health. His wife survives him.

East Orange, N. J.—The Francis Lang Co. has been incorporated, with a capital of $50,000, to conduct a plumbing business. The incorporators are: F. Lang, J. Lang, H. M. Lang, J. Lang, Jr.; all of this city; and C. Lang, of Maplewood, N. J.

Washington, Pa.—W. C. Hall and E. W. McVehil have formed a partnership under the name of Hall & McVehil and purchased the plumbing and heating establishment of T. F. Burte at 40 East Wheeling street.

Benham, Tex.—Gustave Gajeske has opened an up-to-date plumbing establishment here.

Spring Valley, N. Y.—The Smith Plumbing Co. has been incorporated with a capital of $2,000. The incorporators are: B. E. Smith, J. W. Smith and Elmer F. Howell, all of this city.

Woodstock, Ill.—Ernest Ries has opened a plumbing establishment in the McManus building on Cass street.

Bremer, Me.—John N. Lord has opened a plumbing establishment at the Ferry Slip in this town.

SPECIAL FEATURES AT ILLINOIS MASTER PLUMBERS' CONVENTION IN JANUARY.

The Convention of the Illinois Master Plumbers' Association, which is to be held at Springfield, Ill., January 28-29-30, will be marked by some rather unusual departures in the talks to be made.

The Directors have arranged for an address by Dr. Stanley LeFevre Krebs, of Philadelphia, on "Business Building, Advertising and Salesmanship." Dr. Krebs has been an acknowledged leader in platform work for many years and is a student of the best methods in salesmanship and business. For several years he made regular talks before the employees of the John Wanamaker store in Philadelphia and is continually before the public in talks before business men's associations and chambers of commerce. The business men of Springfield, members of the Ad Men's Club and the public in general have been invited to hear Dr. Krebs talk on the evening of Wednesday, January 29th.

A number of manufacturing firms have already contracted for space in Arion Hall for exhibits of their devices. The hall is large enough to accommodate a number of exhibits at one time and will prove much more satisfactory than the arrangement at Decatur last year, when exhibits were scattered about the city and there was not sufficient room to do justice to them.

Another advantage will be the length of the convention, which has been extended to three days instead of two, giving more time for the business of the meeting as well as for exhibitors to show their goods.

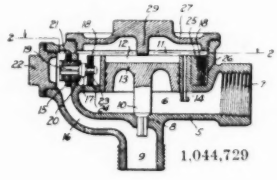
The officers of the State Association are W. J. Hilliard, Elmhurst, president; C. D. Grownell, Champaign, first vice-president; Bernard Gause, Jacksonville, second vice-president; O. W. Dawson, Decatur, treasurer; W. C. Haviland, Aurora, secretary. These officers with Frank U. Patterson, of Springfield, constitute the board of directors.

Publicity without Salesmanship is nix; Publicity plus Salesmanship is Advertising.—Elbert Hubbard.

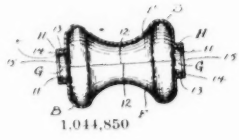
Patents

Heating Department.

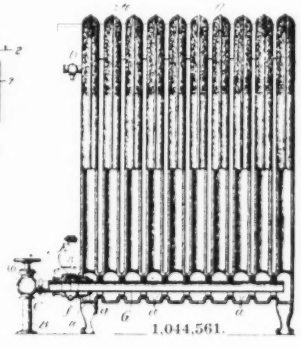
1,044,729. Radiator-Valve. John A. Bemish, Rochester, N. Y. In a radiator-valve, the combination, with a casing comprising upper and lower chambers connected by a by-passage and a cylinder projecting upwardly into the upper chamber, the lower chamber having an inlet and a water-outlet and the upper chamber having a vapor-outlet, a piston movable in the cylinder, a water-valve actuated by the piston and controlling the water-outlet, and a vapor-valve controlling the vapor-outlet, of a thermostatic device encircling the cylinder and connected with and controlling the vapor-valve, said device being thus inclosed between the cylinder and the walls of the upper chamber so as to be immersed in and heated by vapor passing through said chamber from the by-passage to the vapor outlet.



1,044,729.



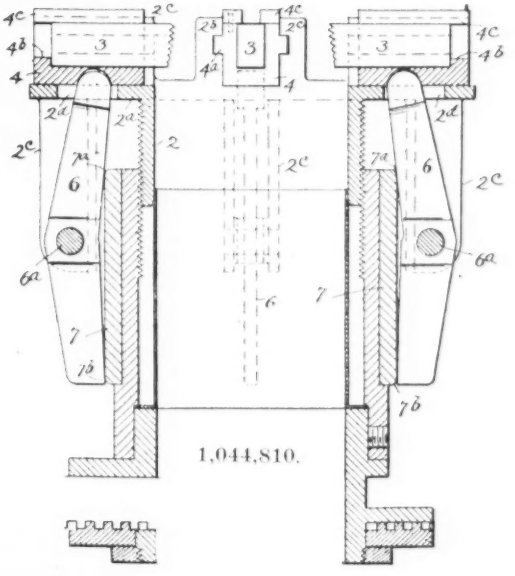
1,044,850.



1,044,561.

1,044,850. Pipe-Roll. Allan J. Beaton, New Britain, Conn., assignor to The Beaton and Cadwell Manufacturing Co., New Britain, Conn., a corporation. A pipe roll having a body portion formed of two similar mating parts of sheet metal having edges in abutment along an axial plane, and comprising a pair of laterally disposed heads connected by a central neck, the said heads and neck being integral axially and shaped and merged into one another suitably to form a bed for supporting a pipe, and means provided at the ends of the said parts for securing the said parts together, and the said means comprising extensions on the said mating parts and ferrules engaged with the same and the said ferrules provided with overhanging flanges at the outer end of which serves as a finish and as bearings for the said roll.

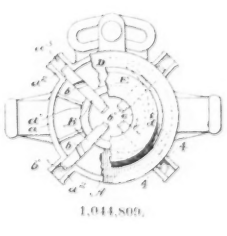
1,044,561. Radiator. John H. Morrow, Chicago, Ill. In a steam heating system, the combination with a steam supply pipe, of a radiator, said radiator comprising loops the tops of which do not communicate with each other, a coupling connecting the pipe with the radiator and having a portion fitting within an opening in the radiator, and projecting into the radiator, said coupling terminating within the radiator in an end having an opening therethrough of less diameter than the interior diameter of the coupling, said coupling also having a hole through the bottom part of the portion thereof which projects into the radiator through which water of condensation passes from the radiator into said coupling, and an imperforate conduit supported by said coupling above the water outlet hole therein and extending from the end thereof which terminates within the radiator to and discharging at a remote point in the radiator.



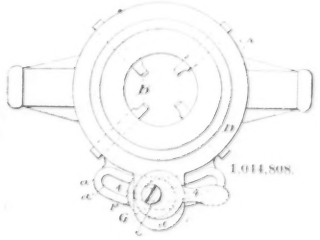
1,044,810.

1,044,810. Die-Stock. Herman W. Oster, Cleveland, Ohio, assignor to The Oster Manufacturing Co., Cleveland, Ohio, a corporation of Ohio. In a die stock, the combination of a work holder, a die carrier rotatable and movable longitudinally relative to said work holder, radially movable dies carried by the die carrier, arms fixed to the die carrier and extending from the front end thereof rearward alongside of the work holder, levers which are pivoted to said arms, each lever being extended on both sides of its pivot at a small angle toward the axis of the die carrier, and two shoulders on the work holder which respectively engage the inner faces of both lever arms of each lever, and means transmitting motion from the front ends of said levers to the dies.

1,044,809. Die-Stock. Herman W. Oster, Cleveland, Ohio, assignor to The Oster Manufacturing Co., Cleveland, Ohio, a corporation of Ohio. In a die stock, the combination of a cylindrical tubular die supporting member having a plurality of outwardly projecting bosses and



1,044,809.



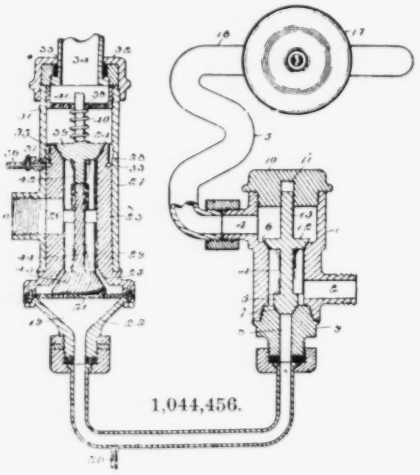
1,044,808.

having also a plurality of radial guideways which are continued outward through said bosses, double ended dies which are radially movable in said guideways, and a cam plate rotatably mounted on said die holding member and having cam scrolls on its inner face which engage with said dies.—said dies and outwardly extended bosses being of such relative lengths that when the dies are engaged by said cam scrolls, their outer ends do not project outward beyond the ends of said bosses.

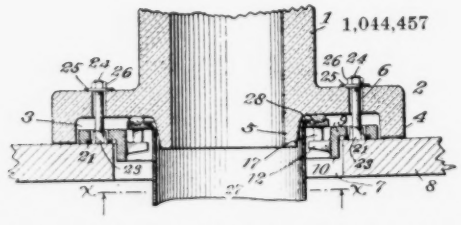
1,044,808. Die-Stock. Herman W. Oster, Cleveland, Ohio, assignor to The Oster Manufacturing Co., Cleveland, Ohio, a corporation of Ohio. The combination of a die stock carrying cutters, and having a laterally extended flange in which is an arcual slot, a cam adjuster mounted on the die stock for adjusting the cutters, said adjuster having a latterly extended ear in which is a slot, a screw stud passing through the arcual slot in the flange on the die stock and having an unthreaded portion which passes also through the slot in the cam plate ear, a non-rotatable clamping member upon the screw stud lying and fitting between the flange on the die stock and the ear on the cam plate, the outer face of said clamping member being of such size as to completely cover the slot in the car of the cam plate, a clamping nut screwing onto the lower end of said stud, and an eccentric rotatably mounted on the unthreaded part of the screw stud and lying in the slot in the ear of the cam plate, and having a flanged head arranged to engage the outer face of said car, said flanged head being of such size as to completely cover the slot therein.

Plumbing Department

1,044,456. Gas Water-Heater. Adolphe Horwitz, Montreal, Quebec, Canada. In a gas water heater, a water container having an inlet at the lower end and an outlet at the upper end, a cock attached to said outlet and a water valve casing secured to said inlet, said casing having an inlet at the lower end and a coil inlet at the upper end, a valve within said casing between said inlet and



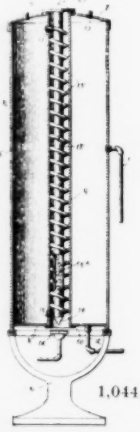
1,044,456.



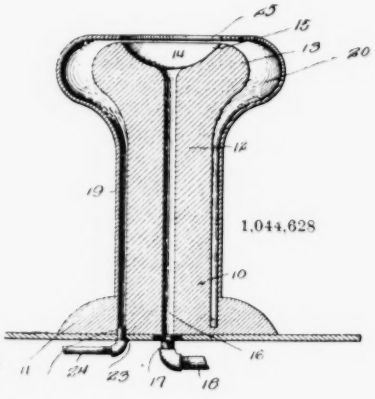
1,044,457

the coil inlet adapted to be lifted from its seat by the flow of water into the casing, a gas heater and a gas valve for regulating the flow of gas thereto, a pipe connecting the water valve casing and said gas valve and means for operating said gas valve through the medium of a column of water in said pipe which is subjected to increased pressure as the water valve rises.

1,044,457. Packing for Water-Closet Bowls. Julius Jaeger, Rutherford, N. J. The combination with the outlet pipe or neck of a water closet bowl, of a floor ring to be supported by and secured to the floor against rotary movement of said floor ring, of means for securing the bowl in place on said floor ring, a packing supporting ring resting upon and supported by the floor ring, a pipe connected with the packing supporting ring and extending downward below the bowl, a packing ring interposed between the underside of the base of the bowl and the packing supporting ring and in contact with both, means on said floor ring for supporting the packing supporting ring at different elevations, while maintaining the packing in contact with the underside of the bowl base and the packing supporting ring, and means on the packing supporting ring for positively engaging the floor ring at various elevations of the packing supporting ring in relation to the floor ring and thereby automatically preventing rotative movement of the packing supporting ring, in relation to the floor ring, substantially as set forth.



1,044,469



1,044,628

1,044,469. Water-Heater. Herbert O. Allen, Auburn, Cal., assignor of one-fourth to Elbert L. Jett, Auburn, Cal. In a water heater, the combination with a tank having inlet and outlet openings and an open ended flue extending therethrough, of a water coil arranged in said flue and communicating directly with the upper and lower portions of said tank, a flame spreading and heat retaining member suspended in the coil extending the length of the flue and consisting of a tube closed at its lower end, and means for supplying heat to said flue, coil and heat retaining tube.

1,044,628. Sanitary Cuspidor. Harry H. Craft, Cedar Rapids, Iowa. A sanitary cuspidor comprising a base, a standard formed thereon, an enlarged head formed upon the standard, said head being concaved and producing a bowl, said standard having a passage extending therethrough and communicating with the bowl, a shell formed upon the base and extending in spaced relation to the standard and the bowl, said shell having an opening formed therein in communication with the bowl, means of supplying fluid to the passage between the standard and the shell and discharge means connected to the passage within the standard.

Jersey City, N. J.—The Ranker Bros. Co. has been incorporated with a capital of $15,000 to conduct a plumbing business. The incorporators are: George H. Ranker, William Ranker and E. Ranker.